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Title 35, United States Code, Section 184
Title 37, Code of Federal Regulations, 5.11 & 5.15

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NOT GRANTED

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PATENT APPLICATION FEE DETERMINATION RECORD						Application or Docket Number 15/744,823	
Substitute for Form PTO-875							
APPLICATION AS FILED - PART I							
(Column 1)		(Column 2)		SMALL ENTITY		OR OTHER THAN SMALL ENTITY	
FOR	NUMBER FILED	NUMBER EXTRA		RATE(\$)	FEE(\$)		
BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A		N/A			N/A 300
SEARCH FEE (37 CFR 1.16(k), (l), or (m))	N/A	N/A		N/A			N/A 520
EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A		N/A			N/A 760
TOTAL CLAIMS (37 CFR 1.16(i))	16	minus 20 =	*			OR	x 100 = 0.00
INDEPENDENT CLAIMS (37 CFR 1.16(h))	2	minus 3 =	*				x 460 = 0.00
APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is \$310 (\$155 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).						0.00
MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))							0.00
* If the difference in column 1 is less than zero, enter "0" in column 2.				TOTAL		TOTAL	1580
APPLICATION AS AMENDED - PART II							
(Column 1)		(Column 2)		(Column 3)		SMALL ENTITY	
AMENDMENT A	CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA	RATE(\$)	ADDITIONAL FEE(\$)	RATE(\$) ADDITIONAL FEE(\$)
	Total (37 CFR 1.16(i))	*	Minus	**	=	x =	OR x =
	Independent (37 CFR 1.16(h))	*	Minus	***	=	x =	OR x =
	Application Size Fee (37 CFR 1.16(s))						OR
	FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))						OR
TOTAL ADD'L FEE						OR	TOTAL ADD'L FEE
(Column 1)		(Column 2)		(Column 3)		SMALL ENTITY	
AMENDMENT B	CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA	RATE(\$)	ADDITIONAL FEE(\$)	RATE(\$) ADDITIONAL FEE(\$)
	Total (37 CFR 1.16(i))	*	Minus	**	=	x =	OR x =
	Independent (37 CFR 1.16(h))	*	Minus	***	=	x =	OR x =
	Application Size Fee (37 CFR 1.16(s))						OR
	FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))						OR
TOTAL ADD'L FEE						OR	TOTAL ADD'L FEE
* If the entry in column 1 is less than the entry in column 2, write "0" in column 3. ** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20". *** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3". The "Highest Number Previously Paid For" (Total or Independent) is the highest found in the appropriate box in column 1.							



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www.uspto.gov

U.S. APPLICATION NUMBER NO.	FIRST NAMED INVENTOR	ATTY. DOCKET NO.
15/744,823	Sung-pyo HONG	811.0104
76277 IP LEGAL SERVICES, LLC P.O. Box 651325 Sterling, VA 20165		
INTERNATIONAL APPLICATION NO. PCT/KR2016/006529		
I.A. FILING DATE		PRIORITY DATE
06/20/2016		07/14/2015

CONFIRMATION NO. 8317
371 ACCEPTANCE LETTER



Date Mailed: 04/16/2018

NOTICE OF ACCEPTANCE OF APPLICATION UNDER 35 U.S.C 371 AND 37 CFR 1.495

The applicant is hereby advised that the United States Patent and Trademark Office, in its capacity as a Designated / Elected Office (37 CFR 1.495), has ACCEPTED the above identified international application for national patentability examination in the United States Patent and Trademark Office.

The United States Application Number assigned to the application is shown above. A Filing Receipt will be issued for the present application in due course. **THE DATE APPEARING ON THE FILING RECEIPT AS THE "FILING DATE or 371(c) DATE" IS THE DATE ON WHICH THE LAST OF THE 35 U.S.C. 371 (c)(1) and (c)(2) REQUIREMENTS HAS BEEN RECEIVED IN THE OFFICE. THIS DATE IS SHOWN BELOW.** The filing date of the above identified application is the international filing date of the international application (Article 11(3) and 35 U.S.C. 363)

01/14/2018
DATE OF RECEIPT OF 35 U.S.C.
371(c)(1) and (c)(2) REQUIREMENTS

The following items have been received:

- Copy of the International Application filed on 01/14/2018
- English Translation of the IA filed on 01/14/2018
- Copy of the International Search Report filed on 01/14/2018
- Preliminary Amendments filed on 01/14/2018
- Information Disclosure Statements filed on 01/14/2018
- Inventor's Oath or Declaration filed on 01/14/2018
- Request for Immediate Examination filed on 01/14/2018
- U.S. Basic National Fees filed on 01/14/2018
- Authorize Access to Search Results filed on 01/14/2018
- Priority Documents filed on 01/14/2018
- Power of Attorney filed on 01/14/2018
- Authorization to Permit Access filed on 01/14/2018
- Application Data Sheet (37 CFR 1.76) filed on 01/14/2018

Applicant is reminded that any communications to the United States Patent and Trademark Office must be mailed to the address given in the heading and include the U.S. application no. shown above (37 CFR 1.5)

BRIAN A HARDEN

Telephone: (703) 756-1815

page 2 of 2

FORM PCT/DO/EO/903 (371 Acceptance Notice)

MULTIPLE DEPENDENT CLAIM FEE CALCULATION SHEET Substitute for Form PTO-1360 (For use with Form PTO/SB/06)							Application Number 15744823		Filing Date		
							Applicant(s) Sung-pyo HONG				
							* May be used for additional claims or amendments				
CLAIMS	AS FILED		AFTER FIRST AMENDMENT		AFTER SECOND AMENDMENT			*	*	*	
	Indep	Depend	Indep	Depend	Indep	Depend					Indep
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Total Indep	2		2		0						
Total Depend	14		14		0						
Total Claims	16		16		0						

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APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
15/744,823	01/14/2018	Sung-pyo HONG	811.0104

CONFIRMATION NO. 8317

PUBLICATION NOTICE



0000000101269311

76277
IP LEGAL SERVICES, LLC
P.O. Box 651325
Sterling, VA 20165

Title:METHOD FOR CONFIGURING WIRELESS CONNECTION OF TERMINAL AND APPARATUS THEREFOR

Publication No.US-2018-0213579-A1

Publication Date:07/26/2018

NOTICE OF PUBLICATION OF APPLICATION

The above-identified application will be electronically published as a patent application publication pursuant to 37 CFR 1.211, et seq. The patent application publication number and publication date are set forth above.

The publication may be accessed through the USPTO's publically available Searchable Databases via the Internet at www.uspto.gov. The direct link to access the publication is currently <http://www.uspto.gov/patft/>.

The publication process established by the Office does not provide for mailing a copy of the publication to applicant. A copy of the publication may be obtained from the Office upon payment of the appropriate fee set forth in 37 CFR 1.19(a)(1). Orders for copies of patent application publications are handled by the USPTO's Public Records Division. The Public Records Division can be reached by telephone at (571) 272-3150 or (800) 972-6382, by facsimile at (571) 273-3250, by mail addressed to the United States Patent and Trademark Office, Public Records Division, Alexandria, VA 22313-1450 or via the Internet.

In addition, information on the status of the application, including the mailing date of Office actions and the dates of receipt of correspondence filed in the Office, may also be accessed via the Internet through the Patent Electronic Business Center at www.uspto.gov using the public side of the Patent Application Information and Retrieval (PAIR) system. The direct link to access this status information is currently <https://portal.uspto.gov/pair/PublicPair>. Prior to publication, such status information is confidential and may only be obtained by applicant using the private side of PAIR.

Further assistance in electronically accessing the publication, or about PAIR, is available by calling the Patent Electronic Business Center at 1-866-217-9197.

Office of Data Management, Application Assistance Unit (571) 272-4000, or (571) 272-4200, or 1-888-786-0101



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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
15/744,823	01/14/2018	Sung-pyo HONG	811.0104	8317
76277	7590	03/21/2019	EXAMINER	
IP LEGAL SERVICES, LLC			NGUYEN, MINH TRANG T	
P.O. Box 651325			ART UNIT	
Sterling, VA 20165			PAPER NUMBER	
			2477	
			NOTIFICATION DATE	
			DELIVERY MODE	
			03/21/2019	
			ELECTRONIC	

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

email@iplsllc.com

Notice of Pre-AIA or AIA Status

1. The present application, filed on or after March 16, 2013, is being examined under the first inventor to file provisions of the AIA.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a)(2) the claimed invention was described in a patent issued under section 151, or in an application for patent published or deemed published under section 122(b), in which the patent or application, as the case may be, names another inventor and was effectively filed before the effective filing date of the claimed invention.

3. Claims 1-16 are rejected under 35 U.S.C. 102(a)(2) as being anticipated by Vikberg et al (US 2016/0242080)(hereinafter Vikberg).

Regarding claim 1, Vikberg discloses a method of configuring, by an access unit, a wireless connection of a terminal, the method comprising:

transmitting a first message to a central unit (see Vikberg, Figs. 18, 20, e.g., eNB-a1), where the first message includes an uplink RRC message received from a terminal (see Vikberg, p. [0117-0120], e.g., UE connects to 5G eNB-s2, the UE provides a UE identifier that is known in the eNB-a1, and p. [0131], e.g., the eNB-s2 sends an indication to the eNB-a1 that the UE has connected to it, and see Fig. 22b, p. [0196-0199]);

receiving a second message from the central unit, where the second message includes a downlink RRC message (see Vikberg, p. [0132], e.g., eNB-a1 decides that dual connection (DC) for Control Plane only or for both Control and User plane is activated for the UE via both LTE and 5G, and see Fig. 22b, p. [0196-0199]); and

transmitting the downlink RRC message to the terminal (see Vikberg, p. [0132], e.g., eNB-a1 decides that DC for Control Plane only or for both Control and User plane is activated for the UE via both LTE and 5G, and informs the UE accordingly, and see Fig. 22b, p. [0196-0199], e.g., transmitting a message to the wireless device confirming that DC has been established. Transmitting the message may simply comprise forwarding the confirmation from the first network element to the wireless device).

Regarding claim 2, Vikberg discloses the method according to claim 1, wherein the access unit comprises a node configured to provide an RLC function, a MAC function, and a PHY function, for transmission of user plane data (see Vikberg, Fig. 14a, p. [0083], e.g., eNB-s), and the central unit comprises a node configured to provide a PDCP function, for transmission of the user plane data (see Vikberg, Fig. 14a, p. [0083], e.g., eNB-a).

Regarding claim 3, Vikberg discloses the method according to claim 1, wherein the first message comprises at least one of an RRC connection request message received from the terminal and a C-RNTI (see Vikberg, p. [0120], e.g., the UE provides a UE identifier that is known in the eNB-a1, and eNB-s1 should have informed eNB-a1 about the C-RNTI allocation and the UE should complement the C-RNTI with an identifier of the cell).

Regarding claim 4, Vikberg discloses the method according to claim 1, wherein the second message comprises at least one of an RRC connection setup message, a C-RNTI, and signaling radio bearer identification information (see Vikberg, p. [0046], Figs. 18, 20, p. [0120-0121], e.g., RRCConnectionSetup message).

Regarding claim 5, Vikberg discloses the method according to claim 1, wherein the access unit and the central unit distinguish signaling radio bearers based on radio bearer identification information included in the first message and the second message (see Vikberg, p.

[0046], e.g., In DC, a UE is connected to one MeNB and one SeNB. The radio protocol architecture that a particular bearer uses depends on how the bearer is setup. Three alternatives exist: Master Cell Group (MCG) bearer, Secondary Cell Group (SCG) bearer, and split bearer, and p. [0120], e.g., UE provides information about eNB-a1 to eNB-s2).

Regarding claim 6, Vikberg discloses the method according to claim 5, wherein the first message includes an RRC connection setup complete message, and the second message includes at least one of an RRC connection reconfiguration message and a security mode command message (see Vikberg, p. [0120-0130], e.g., RRCConnectionSetup message or an RRCConnectionReconfiguration message).

Regarding claim 7, Vikberg discloses the method according to claim 6, wherein the first message includes SRB signaling radio bearer identification information (see Vikberg, p. [0046], e.g., In DC, a UE is connected to one MeNB and one SeNB. The radio protocol architecture that a particular bearer uses depends on how the bearer is setup. Three alternatives exist: Master Cell Group (MCG) bearer, Secondary Cell Group (SCG) bearer, and split bearer, and Signal Radio Bearers (SRBs) are always of the MCG bearer and therefore only use the radio resources provided by the MeNB).

Regarding claim 8, Vikberg discloses the method according to claim 6, wherein the second message includes at least one of radio bearer identification information and QoS parameter information, for setup of terminal context (see Vikberg, p. [0120-130], e.g., A list of the alternative formats of the information identifying the eNB-a1).

Regarding claim 9, Vikberg discloses an access unit (see Vikberg, Figs. 18, 20, e.g., eNB-s2 2030) for configuring a wireless connection of a terminal (e.g., UE 2050), comprising:

a transmitter configured to transmit a first message to a central unit (see Vikberg, Figs. 18, 20, e.g., eNB-a1), where the first message includes an uplink RRC message received from a terminal (see Vikberg, p. [0117-0120], e.g., UE connects to 5G eNB-s2, the UE provides a UE identifier that is known in the eNB-a1, and p. [0131], e.g., the eNB-s2 sends an indication to the eNB-a1 that the UE has connected to it, and see Fig. 22b, p. [0196-0199]); and

a receiver configured to receive a second message from the central unit, where the second message includes a downlink RRC message (see Vikberg, Fig. 18, p. [0116], e.g., eNB-a1 may transfer information to eNB-s2 that is needed to establish a UE context, and p. [0132], e.g., eNB-a1 decides that DC for Control Plane only or for both Control and User plane is activated for the UE via both LTE and 5G, and see Fig. 22b, p. [0196-0199]), wherein the transmitter transmits the downlink RRC message to the terminal (see Vikberg, p. [0132], e.g., eNB-a1 decides that DC for Control Plane only or for both Control and User plane is activated for the UE via both LTE and 5G, and informs the UE accordingly, and see Fig. 22b, p. [0196-0199], e.g., transmitting a message to the wireless device confirming that DC has been established. Transmitting the message may simply comprise forwarding the confirmation from the first network element to the wireless device).

Regarding claim 10, Vikberg discloses the access unit according to claim 9, wherein the access unit comprises a node configured to provide an RLC function, a MAC function, and a PHY function, for transmission of user plane data (see Vikberg, Fig. 14a, p. [0083], e.g., eNB-s), and the central unit comprises a node configured to provide a PDCP function, for transmission of the user plane data (see Vikberg, Fig. 14a, p. [0083], e.g., eNB-a).

Regarding claim 11, Vikberg discloses the access unit according to claim 9, wherein the first message comprises at least one of an RRC connection request message received from the

terminal and a C-RNTI (see Vikberg, p. [0120], e.g., the UE provides a UE identifier that is known in the eNB-a1, and eNB-s1 should have informed eNB-a1 about the C-RNTI allocation and the UE should complement the C-RNTI with an identifier of the cell).

Regarding claim 12, Vikberg discloses the access unit according to claim 9, wherein the second message comprises at least one of an RRC connection setup message, a C-RNTI, and signaling radio bearer identification information (see Vikberg, p. [0046], Figs. 18, 20, p. [0120-0121], e.g., UE provides information about eNB-a1 to eNB-s2).

Regarding claim 13, Vikberg discloses the access unit according to claim 9, wherein the access unit and the central unit distinguish signaling radio bearers based on radio bearer identification information included in the first message and the second message (see Vikberg, p. [0046], e.g., In DC, a UE is connected to one MeNB and one SeNB. The radio protocol architecture that a particular bearer uses depends on how the bearer is setup. Three alternatives exist: Master Cell Group (MCG) bearer, Secondary Cell Group (SCG) bearer, and split bearer, and p. [0120], e.g., UE provides information about eNB-a1 to eNB-s2).

Regarding claim 14, Vikberg discloses the access unit according to claim 13 wherein the first message includes an RRC connection setup complete message, and the second message includes radio resource configuration information of the central unit an RRC connection reconfiguration message or a security mode command message (see Vikberg, p. [0120-0130], e.g., RRCConnectionSetup message or an RRCConnectionReconfiguration message).

Regarding claim 15, Vikberg discloses the access unit according to claim 14, wherein the first message includes SRB1 signaling radio bearer identification information (see Vikberg, p. [0046], e.g., In DC, a UE is connected to one MeNB and one SeNB. The radio protocol architecture that a particular bearer uses depends on how the bearer is setup. Three alternatives

exist: Master Cell Group (MCG) bearer, Secondary Cell Group (SCG) bearer, and split bearer, and Signal Radio Bearers (SRBs) are always of the MCG bearer and therefore only use the radio resources provided by the MeNB).

Regarding claim 16, Vikberg discloses the access unit according to claim 14, wherein the second message includes at least one of radio bearer identification information and QoS parameter information (see Vikberg, p. [0120-130], e.g., A list of the alternative formats of the information identifying the eNB-a1).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to MINH TRANG T NGUYEN whose telephone number is (571)270-5248. The examiner can normally be reached on M-F 8:30am-6:00pm.

Examiner interviews are available via telephone, in-person, and video conferencing using a USPTO supplied web-based collaboration tool. To schedule an interview, applicant is encouraged to use the USPTO Automated Interview Request (AIR) at <http://www.uspto.gov/interviewpractice>.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chirag C Shah can be reached on 571-272-3144. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR

Application/Control Number: 15/744,823
Art Unit: 2477

Page 8

system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/MINH TRANG T NGUYEN/
Primary Examiner, Art Unit 2477

<i>Notice of References Cited</i>	Application/Control No. 15/744,823		Applicant(s)/Patent Under Reexamination	
	Examiner MINH TRANG T NGUYEN		Art Unit 2477	Page 1 of 1

U.S. PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	CPC Classification	US Classification
*	A	US-20160242080-A1	08-2016	Vikberg; Jari	H04W36/0027	1/1
*	B	US-9681352-B2	06-2017	Vesely; Alexander	H04W76/27	1/1
*	C	US-9614652-B2	04-2017	Wager; Stefan	H04L5/0035	1/1
*	D	US-20150131578-A1	05-2015	BAEK; Seung-Kwon	H04B7/024	370/329
*	E	US-20150358866-A1	12-2015	Xu; Jian	H04W36/00	370/331
*	F	US-20150124748-A1	05-2015	PARK; Kyungmin	H04L5/0032	370/329
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FOREIGN PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Country	Name	CPC Classification
	N					
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NON-PATENT DOCUMENTS

*		Include as applicable: Author, Title Date, Publisher, Edition or Volume, Pertinent Pages)
	U	
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*A copy of this reference is not being furnished with this Office action. (See MPEP § 707.05(a).)
Dates in MM-YYYY format are publication dates. Classifications may be US or foreign.

U.S. Patent and Trademark Office
PTO-892 (Rev. 01-2001)

Notice of References Cited

Part of Paper No. 20190118

Search Notes 	Application/Control No. 15/744,823	Applicant(s)/Patent Under Reexamination HONG et al.
	Examiner MINH TRANG T NGUYEN	Art Unit 2477

CPC - Searched*		
Symbol	Date	Examiner
H04W36/0072 , H04W76/10 , H04W76/11 , H04W76/12 , H04W76/27 , H04W92/04	11/25/2018	MN

CPC Combination Sets - Searched*		
Symbol	Date	Examiner

US Classification - Searched*			
Class	Subclass	Date	Examiner

* See search history printout included with this form or the SEARCH NOTES box below to determine the scope of the search.

Search Notes		
Search Notes	Date	Examiner
Inventor search	11/25/2018	MN
H04W36/0072 , H04W76/10 , H04W76/11 , H04W76/12 , H04W76/27 , H04W92/04	11/25/2015	MN
EAST	11/25/2018	MN

Interference Search			
US Class/CPC Symbol	US Subclass/CPC Group	Date	Examiner

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Receipt date: 01/14/2018

15/744,823 - GAU: 2477

Doc code: IDS

Doc description: Information Disclosure Statement (IDS) Filed

PTO/SB/08a (01-10)

Approved for use through 07/31/2012. OMB 0651-0031
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INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)	Application Number		15744823
	Filing Date		2018-01-12
	First Named Inventor	Sung-pyo HONG	
	Art Unit		
	Examiner Name		
Attorney Docket Number		811.0104	

U.S.PATENTS						Remove
Examiner Initial*	Cite No	Patent Number	Kind Code ¹	Issue Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
	1					

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Examiner Initial*	Cite No	Publication Number	Kind Code ¹	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
	1	20160113058	A1	2016-04-21	Myung Cheul Jung et al.	
	2	20150131578	A1	2015-05-14	Seung-Kwon Baek et al.	

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Examiner Initial*	Cite No	Foreign Document Number ³	Country Code ²ⁱ	Kind Code ⁴	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear	T ⁵
	1	10-2014-0137280	KR	A	2014-12-02	KT CORPORATION		×
	2	2014/182134	WO	A1	2014-11-13	PANTECH CO., LTD.		☒

EFS Web 2.1.17

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /M.T.N/

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)	Application Number		15744823	
	Filing Date		2018-01-12	
	First Named Inventor	Sung-pyo HONG		
	Art Unit			
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Attorney Docket Number		811.0104		

3	10-2015-0055535	KR	A	2015-05-21	Electronics and Telecommunications Research...	☒
4	10-2015-0050956	KR	A	2015-05-11	ITL, INC.	☒

If you wish to add additional Foreign Patent Document citation information please click the Add button

NON-PATENT LITERATURE DOCUMENTS

Examiner Initials*	Cite No	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc), date, pages(s), volume-issue number(s), publisher, city and/or country where published.	T ⁵
	1	3GPP TR 36.842 V12.0.0, "3rd Generation Partnership Project; Technical Specification Group Radio Access Network; Study on Small Cell enhancements for E-UTRA and E-UTRAN; Higher layer aspects (Release 12)", December 2013, pp. 1-71	☒

If you wish to add additional non-patent literature document citation information please click the Add button

EXAMINER SIGNATURE

Examiner Signature	/MINH TRANG T NGUYEN/	Date Considered	11/24/2018
--------------------	-----------------------	-----------------	------------

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through a citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

¹ See Kind Codes of USPTO Patent Documents at www.USPTO.GOV or MPEP 901.04. ² Enter office that issued the document, by the two-letter code (WIPO Standard ST.3). ³ For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. ⁴ Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. ⁵ Applicant is to place a check mark here if English language translation is attached.

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)	Application Number	15744823
	Filing Date	2018-01-12
	First Named Inventor	Sung-pyo HONG
	Art Unit	
	Examiner Name	
	Attorney Docket Number	811.0104

CERTIFICATION STATEMENT

Please see 37 CFR 1.97 and 1.98 to make the appropriate selection(s):

That each item of information contained in the information disclosure statement was first cited in any communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(1).

OR

☐ That no item of information contained in the information disclosure statement was cited in a communication from a foreign patent office in a counterpart foreign application, and, to the knowledge of the person signing the certification after making reasonable inquiry, no item of information contained in the information disclosure statement was known to any individual designated in 37 CFR 1.56(c) more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(2).

See attached certification statement.

The fee set forth in 37 CFR 1.17 (p) has been submitted herewith.

☒ A certification statement is not submitted herewith.

SIGNATURE

A signature of the applicant or representative is required in accordance with CFR 1.33, 10.18. Please see CFR 1.4(d) for the form of the signature.

Signature	/Ian M. Hughes/	Date (YYYY-MM-DD)	2018-01-14
Name/Print	Ian M. Hughes	Registration Number	41083

This collection of information is required by 37 CFR 1.97 and 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 1 hour to complete, including gathering, preparing and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

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The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C. 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether the Freedom of Information Act requires disclosure of these records.
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ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /M.T.N/

EAST Search History

EAST Search History (Prior Art)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L1	2	"20160242080"	US-PGPUB; USPAT	AND	ON	2019/03/16 14:57
L2	2	1 and (dual adj3 connect\$5)	US-PGPUB; USPAT	AND	ON	2019/03/16 14:57
L3	27174	((H04W36/0072 OR H04W76/10 OR H04W76/11 OR H04W76/12 OR H04W76/27 OR H04W92/04).CPC.)	US-PGPUB; USPAT	AND	ON	2019/03/16 14:57
L4	1087	3 and (dual adj3 connect\$5)	US-PGPUB; USPAT	AND	ON	2019/03/16 14:57
L5	186	4 and ((eNB or (base station)) same split\$3 adj3 bearer\$3)	US-PGPUB; USPAT	AND	ON	2019/03/16 14:58
L6	120	5 and (RLC and MAC and PHY and PDCP)	US-PGPUB; USPAT	AND	ON	2019/03/16 14:59
L7	66	6 and (bearer adj6 (infor\$6 or identif\$6))	US-PGPUB; USPAT	AND	ON	2019/03/16 14:59
L9	66	7 and RRC	US-PGPUB; USPAT	AND	ON	2019/03/16 14:59
L10	24	9 and ("C-RNTI")	US-PGPUB; USPAT	AND	ON	2019/03/16 15:00
L11	16	10 and (user adj2 plane adj3 data)	US-PGPUB; USPAT	AND	ON	2019/03/16 15:00
L12	21	("20040166843" "20080270611" "20090290540" "20110019644" "20140171054" "20150009915" "20150038140" "20150038143" "20150350962" "20160057684" "20160105832" "20160366719" "8504043" "9237497" "9479973" "9510248" "9544865" "9614652" "9681352" "9699825" "9756531").PN.	US-PGPUB; USPAT; USOCR	AND	ON	2019/03/16 15:00
L13	9	12 and (dual adj3 connect\$5)	US-PGPUB; USPAT	AND	ON	2019/03/16 15:00
L14	4	13 and (RLC and MAC and PHY and PDCP)	US-PGPUB; USPAT	AND	ON	2019/03/16 15:01
L15	2	14 and (split\$3 adj3 bearer\$3)	US-PGPUB; USPAT	AND	ON	2019/03/16 15:01

S1	47	((("HONG") near3 ("Sung-pyo"))).INV.	US-PGPUB; USPAT; USOCR	AND	ON	2018/11/24 21:47
S2	149	((("CHOI") near3 ("Woo-jin"))).INV.	US-PGPUB; USPAT; USOCR	AND	ON	2018/11/24 21:47
S3	1	"20180213579"	US-PGPUB; USPAT	AND	ON	2018/11/24 21:48
S4	25848	((H04W36/0072 OR H04W76/10 OR H04W76/11 OR H04W76/12 OR H04W76/27 OR H04W92/04).CPC.)	US-PGPUB; USPAT	AND	ON	2018/11/24 21:49
S5	12	S4 and (receiv\$3 adj3 uplink adj3 RRC)	US-PGPUB; USPAT	AND	ON	2018/11/24 21:51
S6	7	S5 and (downlink adj3 RRC)	US-PGPUB; USPAT	AND	ON	2018/11/24 21:51
S7	2	S6 and (RLC and MAC and PHY)	US-PGPUB; USPAT	AND	ON	2018/11/24 21:52
S8	368	S4 and (uplink adj3 RRC)	US-PGPUB; USPAT	AND	ON	2018/11/24 21:53
S9	7	S6 and (downlink adj3 RRC)	US-PGPUB; USPAT	AND	ON	2018/11/24 21:53
S10	74	S8 and (downlink adj3 RRC)	US-PGPUB; USPAT	AND	ON	2018/11/24 21:53
S11	25	S10 and (RLC and MAC and PHY)	US-PGPUB; USPAT	AND	ON	2018/11/24 21:53
S12	14	S11 and (PDCP same user adj2 plane adj3 data)	US-PGPUB; USPAT	AND	ON	2018/11/24 21:53
S13	8	S12 and ((terminal or User or UE or node) adj2 (identif\$6 or ID))	US-PGPUB; USPAT	AND	ON	2018/11/24 21:54
S14	8	S12 and ((terminal or User or UE or node or bear) adj2 (identif\$6 or ID))	US-PGPUB; USPAT	AND	ON	2018/11/24 21:55
S15	5	S14 and (resourc\$3 adj4 config\$5)	US-PGPUB; USPAT	AND	ON	2018/11/24 21:55
S16	9	("20030152030" "20100099443" "20110292893" "20120207094" "20120252518" "20130051338" "8032164" "8755825" "9020540").PN.	US-PGPUB; USPAT; USOCR	AND	ON	2018/11/24 21:55
S17	6	(central adj2 (unit or node)) near2 (PDCP)	US-PGPUB; USPAT	AND	ON	2018/11/24 22:03
S18	4	S17 and (RLC and MAC and PHY)	US-PGPUB; USPAT	AND	ON	2018/11/24 22:03

S19	4	S18 and (uplink and downlink)	US-PGPUB; USPAT	AND	ON	2018/11/24 22:03
S20	2	S17 and ((terminal or User or UE or node) adj2 (identif\$6 or ID))	US-PGPUB; USPAT	AND	ON	2018/11/24 22:07
S21	2	"20160113058"	US-PGPUB; USPAT	AND	ON	2018/11/24 22:09
S22	2	S21 and (RLC and MAC and PHY and PDCP)	US-PGPUB; USPAT	AND	ON	2018/11/24 22:10
S23	2	S22 and (uplink and downlink)	US-PGPUB; USPAT	AND	ON	2018/11/24 22:10
S24	2	"20150131578"	US-PGPUB; USPAT	AND	ON	2018/11/25 08:20
S25	246	(dual adj2 connect\$4) same base adj2 station	US-PGPUB; USPAT	AND	ON	2018/11/25 08:23
S26	6	S25 and (uplink and downlink) adj2 RRC	US-PGPUB; USPAT	AND	ON	2018/11/25 08:24
S27	2	"20140337935"	US-PGPUB; USPAT	AND	ON	2018/11/25 08:34
S28	2	S27 and (serving adj2 (eNB and AP))	US-PGPUB; USPAT	AND	ON	2018/11/25 08:34
S29	263	(RLC and MAC and PHY and PDCP) and (dual adj3 connect\$4)	US-PGPUB; USPAT	AND	ON	2018/11/25 08:37
S30	245	S29 and (uplink and downlink)	US-PGPUB; USPAT	AND	ON	2018/11/25 08:37
S31	49	S30 and (resourc\$3 adj4 config\$5)	US-PGPUB; USPAT	AND	ON	2018/11/25 08:37
S32	11	S31 and (PDCP same user adj2 plane adj3 data)	US-PGPUB; USPAT	AND	ON	2018/11/25 08:37
S33	31	S31 and (user adj2 plane adj3 data)	US-PGPUB; USPAT	AND	ON	2018/11/25 08:38
S34	1	"20180213579" and ("C-RNTI")	US-PGPUB; USPAT	AND	ON	2018/11/25 09:01
S35	2	"20140337935" and (identifier)	US-PGPUB; USPAT	AND	ON	2018/11/25 09:02
S36	2	S27 and (serving adj2 (eNB and AP) and uplink and downlink)	US-PGPUB; USPAT	AND	ON	2018/11/25 09:46
S37	2	S27 and (serving adj2 (eNB and AP) and uplink and downlink and RRC)	US-PGPUB; USPAT	AND	ON	2018/11/25 09:46

S38	2	"20120039226"	US-PGPUB; USPAT	AND	ON	2018/11/25 10:43
S39	127	("20050010676" "20050129020" "20060221978" "20070086434" "20070087767" "20070097205" "20070104132" "20070105567" "20070105600" "20070121567" "20070191031" "20070245025" "20070259692" "20070298806" "20080014981" "20080019312" "20080037460" "20080037480" "20080056219" "20080080371" "20080084814" "20080096614" "20080101285" "20080107092" "20080108321" "20080108336" "20080151789" "20080159220" "20080214213" "20080219189" "20080219216" "20080232288" "20080232401" "20080259835" "20080279127" "20080279136" "20080310381" "20080310386" "20080311881" "20080311891" "20080311909" "20080311931" "20090003255" "20090003285" "20090034526" "20090040970" "20090154457" "20090168745" "20090168907" "20090274105" "20090290555" "20090323602" "20090323770" "20100005354" "20100008325" "20100056154" "20100056182" "20100103825" "20100111047" "20100128704" "20100157820" "20100157906" "20100166183" "20100172291" "20100172318" "20100173631" "20100195621" "20100208831" "20100226311" "20100226357" "20100227565" "20100227618" "20100272033" "20100272047" "20100273435" "20100275085" "20100279717" "20100316030" "20100329316" "20100331000" "20110002239" "20110002263" "20110002280" "20110002297" "20110002298" "20110002299" "20110003591" "20110004747" "20110004760" "20110044183" "20110044213" "20110044229" "20110044307").PN. OR ("20110045763" "20110047289" "20110058522" "20110058531" "20110064158" "20110070849" "20110070867" "20110075619" "20110075623" "20110075650" "20110096737" "20120287859" "7391776" "7414976" "7499426" "7548507" "7633904" "7636577" "7693555" "7720490" "7725115" "7746896" "7782817" "7787891" "7804799" "7809355" "7826404" "7852794" "7860469" "7885210" "7907572" "7911936" "7912134" "7912491").PN.	US-PGPUB; USPAT; USOCR	AND	ON	2018/11/25 10:44
S40	0	S39 and (RLC and MAC and PHY and PDCP)	US-	AND	ON	2018/11/25

EAST Search History

		and (dual adj3 connect\$4)	PGPUB; USPAT			10:45
S41	0	S39 and (dual adj3 connect\$4)	US- PGPUB; USPAT	AND	ON	2018/11/25 10:45
S42	1	"20180213579"	US- PGPUB; USPAT	AND	ON	2019/03/15 13:54
S43	1	S42 and (access adj2 unit) and (central adj2 unit)	US- PGPUB; USPAT	AND	ON	2019/03/15 13:54
S44	27174	((H04W36/0072 OR H04W76/10 OR H04W76/11 OR H04W76/12 OR H04W76/27 OR H04W92/04).CPC.)	US- PGPUB; USPAT	AND	ON	2019/03/15 15:04
S45	1920	S44 and (PDCP and MAC and RLC and PHY)	US- PGPUB; USPAT	AND	ON	2019/03/15 15:04
S46	216	S45 and (uplink adj3 RRC)	US- PGPUB; USPAT	AND	ON	2019/03/15 15:05
S47	18	S46 and (downlink adj2 RRC)	US- PGPUB; USPAT	AND	ON	2019/03/15 15:05
S48	14	S47 and (identif\$6)	US- PGPUB; USPAT	AND	ON	2019/03/15 15:05
S49	7	S48 and (bearer adj6 (infor\$6 or identif\$6))	US- PGPUB; USPAT	AND	ON	2019/03/15 15:06
S50	8	("20010029188" "20030092458" "20030206534" "20030235162" "20040076182" "20060223537" "20060281413" "6987981").PN.	US- PGPUB; USPAT; USOCR	AND	ON	2019/03/15 15:17

EAST Search History (I nterference)

< This search history is empty>

3/ 16/ 2019 3:08:28 PM**C:\ Users\ mnguyen13\ Documents\ EAST\ Workspaces\ 15744823.wsp**

Bibliographic Data

Application No: 15/744,823

Foreign Priority claimed: ☒ Yes ☐ No

35 USC 119 (a-d) conditions met: ☒ Yes ☐ No

☐ Met After Allowance

Verified and Acknowledged: /MINH TRANG T NGUYEN/

Examiner's Signature

Initials

Title:

METHOD FOR CONFIGURING WIRELESS CONNECTION OF
TERMINAL AND APPARATUS THEREFOR

FILING or 371(c) DATE	CLASS	GROUP ART UNIT	ATTORNEY DOCKET NO.
01/14/2018	370	2477	811.0104
RULE			

APPLICANTS

KT CORPORATION, Gyeonggi-do, KOREA, REPUBLIC OF

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Woo-jin CHOI Seoul, KOREA, REPUBLIC OF

CONTINUING DATA

This application is a 371 of PCT/KR2016/006529 06/20/2016

FOREIGN APPLICATIONS

KOREA, REPUBLIC OF 10-2015-0099891 07/14/2015

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UNITED STATES

FILING FEE RECEIVED

\$1,480

PATENT APPLICATION FEE DETERMINATION RECORD Substitute for Form PTO-875			Application or Docket Number 15/744,823		Filing Date 01/14/2018		☐ To be Mailed	
ENTITY: ☒ LARGE ☐ SMALL ☐ MICRO								
APPLICATION AS FILED - PART I								
FOR		(Column 1) NUMBER FILED	(Column 2) NUMBER EXTRA	RATE (\$)		FEE (\$)		
☐ BASIC FEE (37 CFR 1.16(a), (b), or (c))		N/A	N/A	N/A				
☐ SEARCH FEE (37 CFR 1.16(k), (l), or (m))		N/A	N/A	N/A				
☐ EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))		N/A	N/A	N/A				
TOTAL CLAIMS (37 CFR 1.16(i))		minus 20 = *		x \$80 =				
INDEPENDENT CLAIMS (37 CFR 1.16(h))		minus 3 = *		x \$420 =				
☐ APPLICATION SIZE FEE (37 CFR 1.16(s))		If the specification and drawings exceed 100 sheets of paper, the application size fee due is \$310 (\$155 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).						
☐ MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))								
* If the difference in column 1 is less than zero, enter "0" in column 2.				TOTAL				
APPLICATION AS AMENDED - PART II								
AMENDMENT	08/21/2019	(Column 1) CLAIMS REMAINING AFTER AMENDMENT	(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	RATE (\$)		ADDITIONAL FEE (\$)	
	Total (37 CFR 1.16(i))	* 14	Minus ** 20	= 0	x \$100 =		0	
	Independent (37 CFR 1.16(h))	* 2	Minus *** 3	= 0	x \$460 =		0	
	☐ Application Size Fee (37 CFR 1.16(s))							
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							
					TOTAL ADD'L FEE		0	
AMENDMENT		(Column 1) CLAIMS REMAINING AFTER AMENDMENT	(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	RATE (\$)		ADDITIONAL FEE (\$)	
	Total (37 CFR 1.16(i))	*	Minus **	=	x \$0 =			
	Independent (37 CFR 1.16(h))	*	Minus ***	=	x \$0 =			
	☐ Application Size Fee (37 CFR 1.16(s))							
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							
					TOTAL ADD'L FEE			
* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.					LIE			
** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".					/VANESSA D HODGES/			
*** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3".								
The "Highest Number Previously Paid For" (Total or Independent) is the highest number found in the appropriate box in column 1.								

This collection of information is required by 37 CFR 1.16. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**
If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

Electronic Patent Application Fee Transmittal				
Application Number:		15744823		
Filing Date:		14-Jan-2018		
Title of Invention:		METHOD FOR CONFIGURING WIRELESS CONNECTION OF TERMINAL AND APPARATUS THEREFOR		
First Named Inventor/Applicant Name:		Sung-pyo HONG		
Filer:		Kyung Hee Kim/yujin Chun		
Attorney Docket Number:		811.0104		
Filed as Large Entity				
Filing Fees for U.S. National Stage under 35 USC 371				
Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Basic Filing:				
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Extension - 2 months with \$0 paid	1252	1	600	600
Miscellaneous:				
Total in USD (\$)				600

Electronic Acknowledgement Receipt	
EFS ID:	36934586
Application Number:	15744823
International Application Number:	
Confirmation Number:	8317
Title of Invention:	METHOD FOR CONFIGURING WIRELESS CONNECTION OF TERMINAL AND APPARATUS THEREFOR
First Named Inventor/Applicant Name:	Sung-pyo HONG
Customer Number:	76277
Filer:	Kyung Hee Kim/yujin Chun
Filer Authorized By:	Kyung Hee Kim
Attorney Docket Number:	811.0104
Receipt Date:	21-AUG-2019
Filing Date:	14-JAN-2018
Time Stamp:	11:17:43
Application Type:	U.S. National Stage under 35 USC 371

Payment information:

Submitted with Payment	yes
Payment Type	CARD
Payment was successfully received in RAM	\$600
RAM confirmation Number	E20198KB18129498
Deposit Account	602802
Authorized User	yujin Chun
The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows: 37 CFR 1.17 (Patent application and reexamination processing fees) 37 CFR 1.19 (Document supply fees)	

37 CFR 1.21 (Miscellaneous fees and charges) 37 CFR 1.492 (National application filing, search, and examination fees) 37 CFR 1.492(a) (Basic national fee only)					
File Listing:					
Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Amendment/Req. Reconsideration-After Non-Final Reject	8110104ReplytoNFOA.pdf	149744	no	8
			7f475169c7563654074eabf8a024f9305e75427c		
Warnings:					
Information:					
2	Fee Worksheet (SB06)	fee-info.pdf	30987	no	2
			78816e98be59a0f99edbdd4215a36ee5aa8ecd20		
Warnings:					
Information:					
Total Files Size (in bytes):			180731		
This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503. <u>New Applications Under 35 U.S.C. 111</u> If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application. <u>National Stage of an International Application under 35 U.S.C. 371</u> If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course. <u>New International Application Filed with the USPTO as a Receiving Office</u> If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.					

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of: Sung-pyo HONG

Re: Attorney Docket No.: 811.0104

Serial No.: 15/744,823

Art Unit: 2477

Filed: 01/14/2018

Examiner: NGUYEN, MINH TRANG T

Matter No.: 811.0104

Conf. No.: 8317

For: METHOD FOR CONFIGURING WIRELESS CONNECTION OF TERMINAL
AND APPARATUS THEREFOR

REPLY TO OFFICE ACTION

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

In response to the Non-Final office action of 03/21/2019, please reconsider the application in light of the following amendments/remarks.

Applicant respectfully request two-months of extensions of time under 37 C.F.R. §1.136 (a). Applicant believes that no further extensions of time and fees are required at this time. However, if extensions of time are necessary to prevent abandonment of this application, such extensions of time are hereby petitioned for under 37 C.F.R. §1.136 (a). The Director is hereby authorized to charge any fees that may be required, or also credit any overpayment, to Deposit Account Number 60-2802.

AMENDMENT TO THE CLAIMS

1. **(Currently Amended)** A method of configuring, by an access unit, a wireless connection of a terminal, the method comprising:

receiving an uplink radio resource control (RRC) message from a terminal, including the uplink RRC message into a first message, and transmitting [[a]] the first message to a central unit, where the first message includes an uplink RRC message received from a terminal;

receiving a second message from the central unit, where the second message includes a downlink RRC message in response to the uplink RRC message from the terminal; and

transmitting the downlink RRC message to the terminal,

wherein the access unit and the central unit distinguish signaling radio bearers based on radio bearer identification information included in the first message and the second message.

2. (Previously Presented) The method according to claim 1, wherein
the access unit comprises a node configured to provide an RLC function, a MAC function, and a PHY function, for transmission of user plane data, and
the central unit comprises a node configured to provide a PDCP function, for transmission of the user plane data.

3. (Previously Presented) The method according to claim 1, wherein the first message comprises at least one of an RRC connection request message received from the terminal and a C-RNTI.

4. (Previously Presented) The method according to claim 1, wherein the second message comprises at least one of an RRC connection setup message, a C-RNTI, and signaling radio bearer identification information.

5. **(Canceled)**

6. (Previously Presented) The method according to claim 1, wherein the first message includes an RRC connection setup complete message, and the second message includes at least one of an RRC connection reconfiguration message and a security mode command message.

7. (Previously Presented) The method according to claim 6, wherein the first message includes SRB1 signaling radio bearer identification information.

8. (Previously Presented) The method according to claim 6, wherein the second message includes at least one of radio bearer identification information and QoS parameter information, for setup of terminal context.

9. **(Currently Amended)** An access unit for configuring a wireless connection of a terminal, comprising:
a transmitter configured to transmit a first message to a central unit, where the first message includes an uplink RRC message received from a terminal; and
a receiver configured to receive a second message from the central unit, where the second message includes a downlink RRC message in response to the uplink RRC message from the terminal,
wherein the transmitter transmits the downlink RRC message to the terminal, and
wherein the access unit and the central unit distinguish signaling radio bearers based on radio bearer identification information included in the first message and the second message.

10. (Previously Presented) The access unit according to claim 9, wherein
the access unit comprises a node configured to provide an RLC function, a MAC function, and a PHY function, for transmission of user plane data, and
the central unit comprises a node configured to provide a PDCP function, for transmission of the user plane data.

11. (Previously Presented) The access unit according to claim 9, wherein the first message comprises at least one of an RRC connection request message received from the terminal and a C-RNTI.

12. (Previously Presented) The access unit according to claim 9, wherein the second message comprises at least one of an RRC connection setup message, a C-RNTI, and signaling radio bearer identification information.

13. (Canceled)

14. (Previously Presented) The access unit according to claim 9, wherein the first message includes an RRC connection setup complete message, and the second message includes radio resource configuration information of the central unit an RRC connection reconfiguration message or a security mode command message.

15. (Previously Presented) The access unit according to claim 14, wherein the first message includes SRB1 signaling radio bearer identification information.

16. (Previously Presented) The access unit according to claim 14, wherein the second message includes at least one of radio bearer identification information and QoS parameter information.

REMARKS

Applicant appreciates the Examiner's review of the present application and respectfully requests reconsideration in view of the foregoing amendments and the following remarks.

Claims Amendments/Status

Claims 1-16 are pending in the instant application. Claims 1 and 9 are amended to better define the claimed invention and to improve claim language. Claims 5 and 13 are canceled without prejudice and disclaimer. Applicant respectfully submits that no new matter is added and the support for the statements herein may be found throughout the specification as originally filed.

35 U.S.C. §103(a)

On page 2 of the outstanding office action, the Examiner rejected claims 1-16 under 35 U.S.C. §102(a) as being anticipated by Vikberg et al. (U.S. Patent Application Publication No. 2016/0242080, hereinafter "Vikberg"). This rejection is respectfully traversed for the reasons set forth below. Accordingly, it is believed that independent claim 1 is patentable at least for the aforementioned reasons. Withdrawal of this rejection is respectfully requested.

Applicant's independent claim 1 recites in pertinent part:

"... the access unit and the central unit distinguish **signaling radio bearers based on radio bearer identification information included in the first message and the second message**." [Emphasis Added]

The claimed invention is directed to i) a radio access network **separation structure** where **an eNB is divided into an access unit and a central unit** and ii) **dual connectivity in such a radio access network separation structure**. In particular, the above claim language is directed to a **signaling method for radio resource control** in a mobile communication network where the eNB is divided into the access unit and the central unit.

On page 2 of the outstanding office action, the Examiner asserted that *Vikberg* teaches all the features of independent claim 1. *Vikberg* is directed to establishment of dual connectivity for a wireless device connected to **a first network element (e.g., eNB-a) via a second network element (e.g., eNB-s) where network functions are split therebetween**. See *Vikberg*, Abstract. Further, *Vikberg* teaches split network functions (e.g., RLC, MAC, PHY, PDCP) in the eNB-s and

the eNB-a in FIG. 14a and FIG. 14b.

However, Applicant respectfully believes that *Vikberg* **does not** teach the above-emphasized features of amended claim 1, for example, "... the access unit and the central unit **distinguish signaling radio bearers based on radio bearer identification information included in the first message and the second message.**"

In particular, on page 4 of the outstanding office action, the Examiner pointed paragraphs [0046] and [0120] for supporting his assertions. However, Applicant respectfully disagrees with the Examiner. In the pointed paragraphs, *Vikberg* **does not** teach distinguishing signaling radio bearers based on radio bearer identification information included in the first message and the second message.

For example, in the pointed paragraph [0046], *Vikberg* teaches about **Dual connectivity (DC) defined in related 3GPP standard.** In fact, the pointed paragraph [0046] merely discloses "...a UE is connected to one MeNB and one SeNB. The radio protocol architecture that a particular bearer uses depends on how the bearer is setup." As described, *Vikberg* might teach about the radio protocol architecture and the bearer. However, *Vikberg* **does not clearly teach** i) any messages including radio bearer identification information and exchanged between the eNB-a and the eNB-s and ii) distinguishing signaling radio bearer based on such messages.

Furthermore, in the pointed paragraph [0120], *Vikberg* describes **UE connection to the eNB-s2** using 5 RAT mechanisms and provides **information about eNB-a1 to eNB-s2.** In particular, the pointed paragraph [0120] teaches the UE identifier as the provided information. However, *Vikberg* is **silent** about i) any messages including radio bearer identification information and exchanged between the eNB-a and the eNB-s and ii) distinguishing signaling radio bearer based on the messages.

Therefore, for the reasons stated above, *vikberg* does not disclose, teach, or suggest all of the features recited in Applicant's claim 1.

Independent claim 9, while not identical to claim 1, contains similar features as claim 1. Therefore, Applicant submits that claim9 is also patentable over the cited reference for at least the

reasons set forth above with regard to claim 1. Claims 2-4, 6-8, 10-12, and 14-16, which are directly or indirectly dependent one of independent claims 1 and 9 are also patentable for at least set forth above with regard to claim 1. Consequently, Applicant respectfully requests that the rejection of the claims under 35 U.S.C. §102 be withdrawn.

CONCLUSION

Applicant believes that a full and complete response has been made to the Office Action and respectfully submits that all of the stated objections and/or grounds for rejection have been overcome or rendered moot. Accordingly, Applicant respectfully submits that the now-pending claims are in condition for allowance and that the entire application is now in condition for allowance.

Should the Examiner feel that there are any issues outstanding after consideration of this response, the Examiner is invited to contact the Applicant's undersigned representative at the number below to expedite prosecution. Prompt and favorable action is respectfully solicited.

Respectfully submitted,

Date: 21 August 2019

/Ian M. Hughes/

Customer No. 76277
IP Legal Services, LLC
P.O. Box 651325
Sterling, VA 20165

Ian M. Hughes, Reg. No. 41,083
Joung Kook Park, Reg. No. 69,192
Attorney/Agent for Applicant
(571) 267-7183 (phone)



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NOTICE OF ALLOWANCE AND FEE(S) DUE

76277 7590 11/27/2019
IP LEGAL SERVICES, LLC
P.O. Box 651325
Sterling, VA 20165

EXAMINER

NGUYEN, MINH TRANG T

ART UNIT

PAPER NUMBER

2477

DATE MAILED: 11/27/2019

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
15/744,823	01/14/2018	Sung-pyo HONG	811.0104	8317

TITLE OF INVENTION: METHOD FOR CONFIGURING WIRELESS CONNECTION OF TERMINAL AND APPARATUS THEREFOR

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	UNDISCOUNTED	\$1000	\$0.00	\$0.00	\$1000	02/27/2020

THE APPLICATION IDENTIFIED ABOVE HAS BEEN EXAMINED AND IS ALLOWED FOR ISSUANCE AS A PATENT. PROSECUTION ON THE MERITS IS CLOSED. THIS NOTICE OF ALLOWANCE IS NOT A GRANT OF PATENT RIGHTS. THIS APPLICATION IS SUBJECT TO WITHDRAWAL FROM ISSUE AT THE INITIATIVE OF THE OFFICE OR UPON PETITION BY THE APPLICANT. SEE 37 CFR 1.313 AND MPEP 1308.

THE ISSUE FEE AND PUBLICATION FEE (IF REQUIRED) MUST BE PAID WITHIN THREE MONTHS FROM THE MAILING DATE OF THIS NOTICE OR THIS APPLICATION SHALL BE REGARDED AS ABANDONED. THIS STATUTORY PERIOD CANNOT BE EXTENDED. SEE 35 U.S.C. 151. THE ISSUE FEE DUE INDICATED ABOVE DOES NOT REFLECT A CREDIT FOR ANY PREVIOUSLY PAID ISSUE FEE IN THIS APPLICATION. IF AN ISSUE FEE HAS PREVIOUSLY BEEN PAID IN THIS APPLICATION (AS SHOWN ABOVE), THE RETURN OF PART B OF THIS FORM WILL BE CONSIDERED A REQUEST TO REAPPLY THE PREVIOUSLY PAID ISSUE FEE TOWARD THE ISSUE FEE NOW DUE.

HOW TO REPLY TO THIS NOTICE:

I. Review the ENTITY STATUS shown above. If the ENTITY STATUS is shown as SMALL or MICRO, verify whether entitlement to that entity status still applies.

If the ENTITY STATUS is the same as shown above, pay the TOTAL FEE(S) DUE shown above.

If the ENTITY STATUS is changed from that shown above, on PART B - FEE(S) TRANSMITTAL, complete section number 5 titled "Change in Entity Status (from status indicated above)".

For purposes of this notice, small entity fees are 1/2 the amount of undiscounted fees, and micro entity fees are 1/2 the amount of small entity fees.

II. PART B - FEE(S) TRANSMITTAL, or its equivalent, must be completed and returned to the United States Patent and Trademark Office (USPTO) with your ISSUE FEE and PUBLICATION FEE (if required). If you are charging the fee(s) to your deposit account, section "4b" of Part B - Fee(s) Transmittal should be completed and an extra copy of the form should be submitted. If an equivalent of Part B is filed, a request to reapply a previously paid issue fee must be clearly made, and delays in processing may occur due to the difficulty in recognizing the paper as an equivalent of Part B.

III. All communications regarding this application must give the application number. Please direct all communications prior to issuance to Mail Stop ISSUE FEE unless advised to the contrary.

IMPORTANT REMINDER: Maintenance fees are due in utility patents issuing on applications filed on or after Dec. 12, 1980. It is patentee's responsibility to ensure timely payment of maintenance fees when due. More information is available at www.uspto.gov/PatentMaintenanceFees.

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Complete and send this form, together with applicable fee(s), by mail or fax, or via EFS-Web.

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Alexandria, Virginia 22313-1450

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76277 7590 11/27/2019
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P.O. Box 651325
Sterling, VA 20165

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I hereby certify that this Fee(s) Transmittal is being deposited with the United States Postal Service with sufficient postage for first class mail in an envelope addressed to the Mail Stop ISSUE FEE address above, or being transmitted to the USPTO via EFS-Web or by facsimile to (571) 273-2885, on the date below.

(Typed or printed name)
(Signature)
(Date)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
15/744,823	01/14/2018	Sung-pyo HONG	811.0104	8317

TITLE OF INVENTION: METHOD FOR CONFIGURING WIRELESS CONNECTION OF TERMINAL AND APPARATUS THEREFOR

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	UNDISCOUNTED	\$1000	\$0.00	\$0.00	\$1000	02/27/2020

EXAMINER	ART UNIT	CLASS-SUBCLASS
NGUYEN, MINH TRANG T	2477	370-329000

1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363).

- ☐ Change of correspondence address (or Change of Correspondence Address form PTO/SB/122) attached.
- ☐ "Fee Address" indication (or "Fee Address" Indication form PTO/SB/47; Rev 03-09 or more recent) attached. **Use of a Customer Number is required.**

2. For printing on the patent front page, list

- (1) The names of up to 3 registered patent attorneys or agents OR, alternatively, 1 _____
- (2) The name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed. 2 _____
- 3 _____

3. ASSIGNEE NAME AND RESIDENCE DATA TO BE PRINTED ON THE PATENT (print or type)

PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. If an assignee is identified below, the document must have been previously recorded, or filed for recordation, as set forth in 37 CFR 3.11 and 37 CFR 3.81(a). Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE

(B) RESIDENCE: (CITY and STATE OR COUNTRY)

Please check the appropriate assignee category or categories (will not be printed on the patent): ☐ Individual ☐ Corporation or other private group entity ☐ Government

4a. Fees submitted: ☐ Issue Fee ☐ Publication Fee (if required) ☐ Advance Order - # of Copies _____

4b. Method of Payment: (Please first reapply any previously paid fee shown above)

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- ☐ The Director is hereby authorized to charge the required fee(s), any deficiency, or credit any overpayment to Deposit Account No. _____

5. **Change in Entity Status** (from status indicated above)

- ☐ Applicant certifying micro entity status. See 37 CFR 1.29
- ☐ Applicant asserting small entity status. See 37 CFR 1.27
- ☐ Applicant changing to regular undiscounted fee status.

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NOTE: If the application was previously under micro entity status, checking this box will be taken to be a notification of loss of entitlement to micro entity status.

NOTE: Checking this box will be taken to be a notification of loss of entitlement to small or micro entity status, as applicable.

NOTE: This form must be signed in accordance with 37 CFR 1.31 and 1.33. See 37 CFR 1.4 for signature requirements and certifications.

Authorized Signature _____

Date _____

Typed or printed name _____

Registration No. _____



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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
15/744,823	01/14/2018	Sung-pyo HONG	811.0104	8317
76277 7590 11/27/2019 IP LEGAL SERVICES, LLC P.O. Box 651325 Sterling, VA 20165			EXAMINER NGUYEN, MINH TRANG T	
			ART UNIT	PAPER NUMBER
			2477	

DATE MAILED: 11/27/2019

Determination of Patent Term Adjustment under 35 U.S.C. 154 (b) (Applications filed on or after May 29, 2000)

The Office has discontinued providing a Patent Term Adjustment (PTA) calculation with the Notice of Allowance.

Section 1(h)(2) of the AIA Technical Corrections Act amended 35 U.S.C. 154(b)(3)(B)(i) to eliminate the requirement that the Office provide a patent term adjustment determination with the notice of allowance. See Revisions to Patent Term Adjustment, 78 Fed. Reg. 19416, 19417 (Apr. 1, 2013). Therefore, the Office is no longer providing an initial patent term adjustment determination with the notice of allowance. The Office will continue to provide a patent term adjustment determination with the Issue Notification Letter that is mailed to applicant approximately three weeks prior to the issue date of the patent, and will include the patent term adjustment on the patent. Any request for reconsideration of the patent term adjustment determination (or reinstatement of patent term adjustment) should follow the process outlined in 37 CFR 1.705.

Any questions regarding the Patent Term Extension or Adjustment determination should be directed to the Office of Patent Legal Administration at (571)-272-7702. Questions relating to issue and publication fee payments should be directed to the Customer Service Center of the Office of Patent Publication at 1-(888)-786-0101 or (571)-272-4200.

OMB Clearance and PRA Burden Statement for PTOL-85 Part B

The Paperwork Reduction Act (PRA) of 1995 requires Federal agencies to obtain Office of Management and Budget approval before requesting most types of information from the public. When OMB approves an agency request to collect information from the public, OMB (i) provides a valid OMB Control Number and expiration date for the agency to display on the instrument that will be used to collect the information and (ii) requires the agency to inform the public about the OMB Control Number's legal significance in accordance with 5 CFR 1320.5(b).

The information collected by PTOL-85 Part B is required by 37 CFR 1.311. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 30 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, Virginia 22313-1450. **DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450.** Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

Privacy Act Statement

The Privacy Act of 1974 (P.L. 93-579) requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b) (2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C. 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether disclosure of these records is required by the Freedom of Information Act.
2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.
3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.
4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).
5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.
6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).
7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.
8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspection or an issued patent.
9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

Notice of Allowability	Application No. 15/744,823	Applicant(s) HONG et al.	
	Examiner MINH TRANG T NGUYEN	Art Unit 2477	AIA (FITF) Status Yes

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to communication filed 08/21/2019.
☐ A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on _____.

2. ☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on _____; the restriction requirement and election have been incorporated into this action.

3. ☒ The allowed claim(s) is/are 1-4,6-12 and 14-16. As a result of the allowed claim(s), you may be eligible to benefit from the **Patent Prosecution Highway** program at a participating intellectual property office for the corresponding application. For more information, please see http://www.uspto.gov/patents/init_events/pph/index.jsp or send an inquiry to PPHfeedback@uspto.gov.

4. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
Certified copies:
a) ☐ All b) ☐ Some *c) ☐ None of the:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).
* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).

6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☐ Notice of References Cited (PTO-892)	5. ☐ Examiner's Amendment/Comment
2. ☐ Information Disclosure Statements (PTO/SB/08), Paper No./Mail Date _____.	6. ☒ Examiner's Statement of Reasons for Allowance
3. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material _____.	7. ☐ Other _____.
4. ☐ Interview Summary (PTO-413), Paper No./Mail Date. _____.	

/MINH TRANG T NGUYEN/ Primary Examiner, Art Unit 2477	
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Notice of Pre-AIA or AIA Status

1. The present application, filed on or after March 16, 2013, is being examined under the first inventor to file provisions of the AIA.

REASONS FOR ALLOWANCE

2. The following is an examiner's statement of reasons for allowance: the claimed invention requires a combination of distinct features, which are not found in the prior art, either singularly or in combination. The independent claims identify the following uniquely distinct features:

Independent claim 1 requires "wherein the access unit and the central unit distinguish signaling radio bearers based on radio bearer identification information-included in the first message and the second message."

Independent claim 9 requires "wherein the access unit and the central unit distinguish signaling radio bearers based on radio bearer identification information included in the first message and the second message."

The closest prior art references found, either singularly or in combination, fail to anticipate or render the above limitations obvious.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

3. Any inquiry concerning this communication or earlier communications from the examiner should be directed to MINH TRANG T NGUYEN whose telephone number is (571)270-5248. The examiner can normally be reached on M-F 8:30am-6:00pm.

Examiner interviews are available via telephone, in-person, and video conferencing using a USPTO supplied web-based collaboration tool. To schedule an interview, applicant is encouraged to use the USPTO Automated Interview Request (AIR) at <http://www.uspto.gov/interviewpractice>.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chirag C Shah can be reached on 571-272-3144. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/MINH TRANG T NGUYEN/
Primary Examiner, Art Unit 2477

Issue Classification 	Application/Control No. 15/744,823	Applicant(s)/Patent Under Reexamination HONG et al.
	Examiner MINH TRANG T NGUYEN	Art Unit 2477

CPC						
Symbol					Type	Version
H04W	/	76	/	11	F	2018-02-01
H04W	/	76	/	10	I	2018-02-01
H04W	/	76	/	12	I	2018-02-01
H04W	/	76	/	27	I	2018-02-01
H04W	/	36	/	0072	I	2013-01-01
H04W	/	92	/	04	A	2013-01-01
H04L	/	5	/	0035	A	2013-01-01
H04W	/	8	/	26	A	2013-01-01
H04L	/	5	/	001	A	2013-01-01

CPC Combination Sets				
Symbol	Type	Set	Ranking	Version
/				

NONE		Total Claims Allowed:	
(Assistant Examiner)	(Date)	14	
/MINH TRANG T NGUYEN/ Primary Examiner, Art Unit 2477	24 November 2019	O.G. Print Claim(s)	O.G. Print Figure
(Primary Examiner)	(Date)	1	11

U.S. Patent and Trademark Office

Part of Paper No.: 20191124

Issue Classification 	Application/Control No. 15/744,823	Applicant(s)/Patent Under Reexamination HONG et al.
	Examiner MINH TRANG T NGUYEN	Art Unit 2477

INTERNATIONAL CLASSIFICATION			
CLAIMED			
H04W		4	00

NON-CLAIMED			

US ORIGINAL CLASSIFICATION	
CLASS	SUBCLASS

CROSS REFERENCES(S)						
CLASS	SUBCLASS (ONE SUBCLASS PER BLOCK)					

NONE		Total Claims Allowed:	
(Assistant Examiner)	(Date)	14	
/MINH TRANG T NGUYEN/ Primary Examiner, Art Unit 2477	24 November 2019	O.G. Print Claim(s)	O.G. Print Figure
(Primary Examiner)	(Date)	1	11

U.S. Patent and Trademark Office

Part of Paper No.: 20191124

Issue Classification 	Application/Control No. 15/744,823	Applicant(s)/Patent Under Reexamination HONG et al.
	Examiner MINH TRANG T NGUYEN	Art Unit 2477

☐ Claims renumbered in the same order as presented by applicant
 ☐ CPA
 ☐ T.D.
 ☐ R.1.47

CLAIMS															
Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original
1	1	9	10												
2	2	10	11												
3	3	11	12												
4	4		13												
	5	12	14												
5	6	13	15												
6	7	14	16												
7	8														
8	9														

NONE		Total Claims Allowed:	
(Assistant Examiner)	(Date)	14	
/MINH TRANG T NGUYEN/ Primary Examiner, Art Unit 2477	24 November 2019	O.G. Print Claim(s)	O.G. Print Figure
(Primary Examiner)	(Date)	1	11

<i>Search Notes</i> 	Application/Control No. 15/744,823	Applicant(s)/Patent Under Reexamination HONG et al.
	Examiner MINH TRANG T NGUYEN	Art Unit 2477

CPC - Searched*		
Symbol	Date	Examiner
H04W36/0072 , H04W76/10 , H04W76/11 , H04W76/12 , H04W76/27 , H04W92/04	11/25/2018	MN

CPC Combination Sets - Searched*		
Symbol	Date	Examiner

US Classification - Searched*			
Class	Subclass	Date	Examiner

* See search history printout included with this form or the SEARCH NOTES box below to determine the scope of the search.

Search Notes		
Search Notes	Date	Examiner
Inventor search	11/25/2018	MN
H04W36/0072 , H04W76/10 , H04W76/11 , H04W76/12 , H04W76/27 , H04W92/04	11/25/2015	MN
EAST	11/25/2018	MN
Updated search	11/24/2019	MN

Interference Search			
US Class/CPC Symbol	US Subclass/CPC Group	Date	Examiner
PGPub-Text search	Interference search-see search history printout	11/24/2019	MN

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EAST Search History

EAST Search History (Prior Art)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
S1	47	((("HONG") near3 ("Sung-pyo"))).INV.	US-PGPUB; USPAT; USOCR	AND	ON	2018/11/24 21:47
S2	149	((("CHOI") near3 ("Woo-jin"))).INV.	US-PGPUB; USPAT; USOCR	AND	ON	2018/11/24 21:47
S3	1	"20180213579"	US-PGPUB; USPAT	AND	ON	2018/11/24 21:48
S4	25848	((H04W36/0072 OR H04W76/10 OR H04W76/11 OR H04W76/12 OR H04W76/27 OR H04W92/04).CPC.)	US-PGPUB; USPAT	AND	ON	2018/11/24 21:49
S5	12	S4 and (receiv\$3 adj3 uplink adj3 RRC)	US-PGPUB; USPAT	AND	ON	2018/11/24 21:51
S6	7	S5 and (downlink adj3 RRC)	US-PGPUB; USPAT	AND	ON	2018/11/24 21:51
S7	2	S6 and (RLC and MAC and PHY)	US-PGPUB; USPAT	AND	ON	2018/11/24 21:52
S8	368	S4 and (uplink adj3 RRC)	US-PGPUB; USPAT	AND	ON	2018/11/24 21:53
S9	7	S6 and (downlink adj3 RRC)	US-PGPUB; USPAT	AND	ON	2018/11/24 21:53
S10	74	S8 and (downlink adj3 RRC)	US-PGPUB; USPAT	AND	ON	2018/11/24 21:53
S11	25	S10 and (RLC and MAC and PHY)	US-PGPUB; USPAT	AND	ON	2018/11/24 21:53
S12	14	S11 and (PDCP same user adj2 plane adj3 data)	US-PGPUB; USPAT	AND	ON	2018/11/24 21:53
S13	8	S12 and ((terminal or User or UE or node) adj2 (identif\$6 or ID))	US-PGPUB; USPAT	AND	ON	2018/11/24 21:54
S14	8	S12 and ((terminal or User or UE or node or bear) adj2 (identif\$6 or ID))	US-PGPUB; USPAT	AND	ON	2018/11/24 21:55
S15	5	S14 and (resourc\$3 adj4 config\$5)	US-PGPUB; USPAT	AND	ON	2018/11/24 21:55

S16	9	("20030152030" "20100099443" "20110292893" "20120207094" "20120252518" "20130051338" "8032164" "8755825" "9020540").PN.	US-PGPUB; USPAT; USOCR	AND	ON	2018/11/24 21:55
S17	6	(central adj2 (unit or node)) near2 (PDCP)	US-PGPUB; USPAT	AND	ON	2018/11/24 22:03
S18	4	S17 and (RLC and MAC and PHY)	US-PGPUB; USPAT	AND	ON	2018/11/24 22:03
S19	4	S18 and (uplink and downlink)	US-PGPUB; USPAT	AND	ON	2018/11/24 22:03
S20	2	S17 and ((terminal or User or UE or node) adj2 (identif\$6 or ID))	US-PGPUB; USPAT	AND	ON	2018/11/24 22:07
S21	2	"20160113058"	US-PGPUB; USPAT	AND	ON	2018/11/24 22:09
S22	2	S21 and (RLC and MAC and PHY and PDCP)	US-PGPUB; USPAT	AND	ON	2018/11/24 22:10
S23	2	S22 and (uplink and downlink)	US-PGPUB; USPAT	AND	ON	2018/11/24 22:10
S24	2	"20150131578"	US-PGPUB; USPAT	AND	ON	2018/11/25 08:20
S25	246	(dual adj2 connect\$4) same base adj2 station	US-PGPUB; USPAT	AND	ON	2018/11/25 08:23
S26	6	S25 and (uplink and downlink) adj2 RRC	US-PGPUB; USPAT	AND	ON	2018/11/25 08:24
S27	2	"20140337935"	US-PGPUB; USPAT	AND	ON	2018/11/25 08:34
S28	2	S27 and (serving adj2 (eNB and AP))	US-PGPUB; USPAT	AND	ON	2018/11/25 08:34
S29	263	(RLC and MAC and PHY and PDCP) and (dual adj3 connect\$4)	US-PGPUB; USPAT	AND	ON	2018/11/25 08:37
S30	245	S29 and (uplink and downlink)	US-PGPUB; USPAT	AND	ON	2018/11/25 08:37
S31	49	S30 and (resourc\$3 adj4 config\$5)	US-PGPUB; USPAT	AND	ON	2018/11/25 08:37
S32	11	S31 and (PDCP same user adj2 plane adj3 data)	US-PGPUB; USPAT	AND	ON	2018/11/25 08:37
S33	31	S31 and (user adj2 plane adj3 data)	US-PGPUB; USPAT	AND	ON	2018/11/25 08:38
S34	1	"20180213579" and ("C-RNTI")	US-PGPUB;	AND	ON	2018/11/25 09:01

			USPAT			
S35	2	"20140337935" and (identifier)	US-PGPUB; USPAT	AND	ON	2018/11/25 09:02
S36	2	S27 and (serving adj2 (eNB and AP) and uplink and downlink)	US-PGPUB; USPAT	AND	ON	2018/11/25 09:46
S37	2	S27 and (serving adj2 (eNB and AP) and uplink and downlink and RRC)	US-PGPUB; USPAT	AND	ON	2018/11/25 09:46
S38	2	"20120039226"	US-PGPUB; USPAT	AND	ON	2018/11/25 10:43
S39	127	("20050010676" "20050129020" "20060221978" "20070086434" "20070087767" "20070097205" "20070104132" "20070105567" "20070105600" "20070121567" "20070191031" "20070245025" "20070259692" "20070298806" "20080014981" "20080019312" "20080037460" "20080037480" "20080056219" "20080080371" "20080084814" "20080096614" "20080101285" "20080107092" "20080108321" "20080108336" "20080151789" "20080159220" "20080214213" "20080219189" "20080219216" "20080232288" "20080232401" "20080259835" "20080279127" "20080279136" "20080310381" "20080310386" "20080311881" "20080311891" "20080311909" "20080311931" "20090003255" "20090003285" "20090034526" "20090040970" "20090154457" "20090168745" "20090168907" "20090274105" "20090290555" "20090323602" "20090323770" "20100005354" "20100008325" "20100056154" "20100056182" "20100103825" "20100111047" "20100128704" "20100157820" "20100157906" "20100166183" "20100172291" "20100172318" "20100173631" "20100195621" "20100208831" "20100226311" "20100226357" "20100227565" "20100227618" "20100272033" "20100272047" "20100273435" "20100275085" "20100279717" "20100316030" "20100329316" "20100331000" "20110002239" "20110002263" "20110002280" "20110002297" "20110002298" "20110002299" "20110003591" "20110004747" "20110004760" "20110044183" "20110044213" "20110044229" "20110044307").PN. OR ("20110045763" "20110047289" "20110058522" "20110058531" "20110064158"	US-PGPUB; USPAT; USOCR	AND	ON	2018/11/25 10:44

		"20110070849" "20110070867" "20110075619" "20110075623" "20110075650" "20110096737" "20120287859" "7391776" "7414976" "7499426" "7548507" "7633904" "7636577" "7693555" "7720490" "7725115" "7746896" "7782817" "7787891" "7804799" "7809355" "7826404" "7852794" "7860469" "7885210" "7907572" "7911936" "7912134" "7912491").PN.				
S40	0	S39 and (RLC and MAC and PHY and PDCP) and (dual adj3 connect\$4)	US- PGPUB; USPAT	AND	ON	2018/11/25 10:45
S41	0	S39 and (dual adj3 connect\$4)	US- PGPUB; USPAT	AND	ON	2018/11/25 10:45
S42	1	"20180213579"	US- PGPUB; USPAT	AND	ON	2019/03/15 13:54
S43	1	S42 and (access adj2 unit) and (central adj2 unit)	US- PGPUB; USPAT	AND	ON	2019/03/15 13:54
S44	27174	((H04W36/0072 OR H04W76/10 OR H04W76/11 OR H04W76/12 OR H04W76/27 OR H04W92/04).CPC.)	US- PGPUB; USPAT	AND	ON	2019/03/15 15:04
S45	1920	S44 and (PDCP and MAC and RLC and PHY)	US- PGPUB; USPAT	AND	ON	2019/03/15 15:04
S46	216	S45 and (uplink adj3 RRC)	US- PGPUB; USPAT	AND	ON	2019/03/15 15:05
S47	18	S46 and (downlink adj2 RRC)	US- PGPUB; USPAT	AND	ON	2019/03/15 15:05
S48	14	S47 and (identif\$6)	US- PGPUB; USPAT	AND	ON	2019/03/15 15:05
S49	7	S48 and (bearer adj6 (infor\$6 or identif\$6))	US- PGPUB; USPAT	AND	ON	2019/03/15 15:06
S50	8	("20010029188" "20030092458" "20030206534" "20030235162" "20040076182" "20060223537" "20060281413" "6987981").PN.	US- PGPUB; USPAT; USOCR	AND	ON	2019/03/15 15:17
S51	2	"20160242080"	US- PGPUB; USPAT	AND	ON	2019/03/16 14:57
S52	2	S51 and (dual adj3 connect\$5)	US- PGPUB; USPAT	AND	ON	2019/03/16 14:57
S53	27174	((H04W36/0072 OR H04W76/10 OR H04W76/11 OR H04W76/12 OR H04W76/27 OR H04W92/04).CPC.)	US- PGPUB; USPAT	AND	ON	2019/03/16 14:57
S54	1087	S53 and (dual adj3 connect\$5)	US- PGPUB; USPAT	AND	ON	2019/03/16 14:57
S55	186	S54 and ((eNB or (base station)) same split\$3	US-	AND	ON	2019/03/16

		adj3 bearer\$3)	PGPUB; USPAT			14:58
S56	120	S55 and (RLC and MAC and PHY and PDCP)	US- PGPUB; USPAT	AND	ON	2019/03/16 14:59
S57	66	S56 and (bearer adj6 (infor\$6 or identif\$6))	US- PGPUB; USPAT	AND	ON	2019/03/16 14:59
S58	66	S57 and RRC	US- PGPUB; USPAT	AND	ON	2019/03/16 14:59
S59	24	S58 and ("C-RNTI")	US- PGPUB; USPAT	AND	ON	2019/03/16 15:00
S60	16	S59 and (user adj2 plane adj3 data)	US- PGPUB; USPAT	AND	ON	2019/03/16 15:00
S61	21	("20040166843" "20080270611" "20090290540" "20110019644" "20140171054" "20150009915" "20150038140" "20150038143" "20150350962" "20160057684" "20160105832" "20160366719" "8504043" "9237497" "9479973" "9510248" "9544865" "9614652" "9681352" "9699825" "9756531").PN.	US- PGPUB; USPAT; USOCR	AND	ON	2019/03/16 15:00
S62	9	S61 and (dual adj3 connect\$5)	US- PGPUB; USPAT	AND	ON	2019/03/16 15:00
S63	4	S62 and (RLC and MAC and PHY and PDCP)	US- PGPUB; USPAT	AND	ON	2019/03/16 15:01
S64	2	S63 and (split\$3 adj3 bearer\$3)	US- PGPUB; USPAT	AND	ON	2019/03/16 15:01
S65	13	(eNB same access adj2 unit same central adj3 unit)	US- PGPUB; USPAT	AND	ON	2019/11/18 10:26
S66	1	S65 and (radio adj2 bearer\$3 same identif\$7)	US- PGPUB; USPAT	AND	ON	2019/11/18 10:27
S67	41	(eNB and access adj2 unit same central adj3 unit)	US- PGPUB; USPAT	AND	ON	2019/11/18 10:28
S68	3	S67 and (radio adj2 bearer\$3 same identif\$7)	US- PGPUB; USPAT	AND	ON	2019/11/18 10:37
S69	4	S67 and (bearer\$3 same identif\$7)	US- PGPUB; USPAT	AND	ON	2019/11/18 10:38
S70	2	("20150131578" "20160113058").PN.	US- PGPUB; USPAT	AND	ON	2019/11/18 10:41
S71	2317	(access adj2 unit same central adj3 unit)	US- PGPUB; USPAT	AND	ON	2019/11/24 14:48
S72	41	(eNB and access adj2 unit same central adj3 unit)	US- PGPUB;	AND	ON	2019/11/24 14:50

			USPAT			
S73	5	S71 and (RRC near2 connect\$4 near2 request\$3)	US-PGPUB; USPAT	AND	ON	2019/11/24 15:01
S74	1	S73 and (X5 adj2 message\$3)	US-PGPUB; USPAT	AND	ON	2019/11/24 15:01
S75	3	S73 and (setup\$3 adj2 message\$3)	US-PGPUB; USPAT	AND	ON	2019/11/24 15:02
S76	130	(RRC near2 connect\$4 near2 request\$3 same access adj2 (unit or node))	US-PGPUB; USPAT	AND	ON	2019/11/24 15:02
S77	2	S76 and (setup\$3 adj2 message\$3 same central adj2 (unit or node))	US-PGPUB; USPAT	AND	ON	2019/11/24 15:03
S78	2	S76 and (setup\$3 same central adj2 (unit or node))	US-PGPUB; USPAT	AND	ON	2019/11/24 15:04
S79	13	(eNB same access adj2 unit same central adj3 unit)	US-PGPUB; USPAT	AND	ON	2019/11/24 15:04
S80	3	S79 and (RRC near2 connect\$4)	US-PGPUB; USPAT	AND	ON	2019/11/24 15:04
S81	533	(eNB or enodeB or base adj2 station) same (divid\$3 or split\$3) same ((access and central) or (AU and CU))	US-PGPUB; USPAT	AND	ON	2019/11/24 15:14
S82	134	S81 and (RRC near2 connect\$4)	US-PGPUB; USPAT	AND	ON	2019/11/24 15:14
S83	30	S82 and (bearer adj2 identif\$7)	US-PGPUB; USPAT	AND	ON	2019/11/24 15:15
S84	9	S83 and (setup\$3 adj2 RRC)	US-PGPUB; USPAT	AND	ON	2019/11/24 15:15
S85	14	("20100272045" "20110038335" "20110170495" "20110267959" "20120057547" "20130084878" "20130107783" "20130132854" "20130303114" "20140074641" "20160027112" "20160037510" "20160057711" "9980308").PN.	US-PGPUB; USPAT; USOCR	AND	ON	2019/11/24 15:28
S86	13	S85 and @ad< "20150714"	US-PGPUB; USPAT	AND	ON	2019/11/24 15:28
S87	24	(eNB near2 split\$3 same access and central)	US-PGPUB; USPAT	AND	ON	2019/11/24 15:44
S88	8	S87 and @ad< "20150714"	US-PGPUB; USPAT	AND	ON	2019/11/24 15:44
S89	2	"20140192734"	US-PGPUB; USPAT	AND	ON	2019/11/24 15:51
S90	2	S89 and (inter near2 eNB near2 comp)	US-	AND	ON	2019/11/24

EAST Search History

			PGPUB; USPAT			15:51
S91	2	S89 and (inter near2 eNB near2 comp) and split\$3	US- PGPUB; USPAT	AND	ON	2019/11/24 15:53
S92	9	("20100031117" "20100091678" "20110218016" "20110255486" "20110286398" "20110317637" "20120087273" "20120269140" "20130301434").PN.	US- PGPUB; USPAT; USOCR	AND	ON	2019/11/24 15:57

EAST Search History (I nterference)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
S93	1	(access and unit and central and bearer\$3 and identif\$8 and infor\$6 and radio and signal\$4 and distinguish\$3).clm.	US- PGPUB; USPAT	AND	ON	2019/11/24 16:14

11/ 24/ 2019 4:24:16 PM

C:\ Users\ mnguyen13\ Documents\ EAST\ Workspaces\ 15744823.wsp

Customer No.: 76277

PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of: Sung-pyo HONG et al.

Re: Attorney Docket No.: 811.0104

Serial No.: 15/744,823

Group Art Unit: 2477

Filed: 01/14/2018

Examiner: NGUYEN, MINH TRANG T

Matter No.: 811.0104

Conf. No.: 8317

For: METHOD FOR CONFIGURING WIRELESS CONNECTION OF TERMINAL AND
APPARATUS THEREFOR

REQUEST FOR CORRECTED NOTICE OF ALLOWANCE

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

In response to the Notice of Allowance mailed November 27, 2019, Applicant respectfully submits that a claim for foreign priority under 35 U.S.C. 119 has been made in the present application and that the priority documents have been electronically retrieved by USPTO from IB and placed in PAIR on 01/14/2018. Accordingly, Applicant respectfully requests an acknowledgement of the claim for foreign priority.

Respectfully submitted,

Date: 11 December 2019
Customer No. 76277
IP Legal Services, LLC
P.O. Box 651325
Sterling, VA 20165

/Ian M. Hughes/
Ian M. Hughes, Reg. No. 41,083
Kyung Hee Kim, Reg. No. 69,183
Attorney/Agent for Applicant
(571) 267-7183 (phone)

Electronic Acknowledgement Receipt	
EFS ID:	37995928
Application Number:	15744823
International Application Number:	
Confirmation Number:	8317
Title of Invention:	METHOD FOR CONFIGURING WIRELESS CONNECTION OF TERMINAL AND APPARATUS THEREFOR
First Named Inventor/Applicant Name:	Sung-pyo HONG
Customer Number:	76277
Filer:	Kyung Hee Kim/yujin Chun
Filer Authorized By:	Kyung Hee Kim
Attorney Docket Number:	811.0104
Receipt Date:	11-DEC-2019
Filing Date:	14-JAN-2018
Time Stamp:	12:43:00
Application Type:	U.S. National Stage under 35 USC 371

Payment information:

Submitted with Payment	no
------------------------	----

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Request for Corrected Notice of Allowance	8110104RequestforCorrectedN OA.pdf	96726	no	1
			d74d8d36eda924ed9fa89d5a8cb17b3ea07e564a		

Warnings:

Information:	
Total Files Size (in bytes):	96726
This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503. <u>New Applications Under 35 U.S.C. 111</u> If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application. <u>National Stage of an International Application under 35 U.S.C. 371</u> If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course. <u>New International Application Filed with the USPTO as a Receiving Office</u> If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.	



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
15/744,823	01/14/2018	Sung-pyo HONG	811.0104	8317

7590 01/16/2020
IP LEGAL SERVICES, LLC
P.O. Box 651325
Sterling, VA 20165

EXAMINER	
NGUYEN, MINH TRANG T	
ART UNIT	PAPER NUMBER
2477	

DATE MAILED: 01/16/2020

PRIORITY ACKNOWLEDGMENT

- ☒ 1. Receipt is acknowledged of priority papers submitted under 35 U.S.C. 119. The papers have been placed of record in the file.
- ☐ 2. Applicant's claim for priority, based on papers filed in parent Application Number _____ submitted under 35 U.S.C. 119, is acknowledged.
- ☐ 3. The priority papers, submitted _____, after payment of the issue fee are
- ☐ acknowledged
While the priority claim or certified copy filed will be placed in the file record, neither will be reviewed and the patent when published will not include the priority claim.
See 37 CFR 1.55(a)(2).
 - ☐ not acknowledged since the processing fee in 37 CFR 1.17(i) has not been received.
- ☐ 4. For utility and plant applications filed on or after November 29, 2000, the priority claim is not entered because the claim was not presented within the time limit required by 37 CFR 1.55(a)(1). A petition to accept a delayed claim for priority under 35 U.S.C. 119(a) - (d) or (f), or 365(a) may be filed. See 37 CFR 1.55(c) and MPEP 201.14(a).

571-272-4200 or 1-888-786-0101
Application Assistance Unit
Office of Data Management

PART B - FEE(S) TRANSMITTAL

Complete and send this form, together with applicable fee(s), by mail or fax, or via EFS-Web.

By mail, send to: Mail Stop ISSUE FEE
Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450

By fax, send to: (571)-273-2885

INSTRUCTIONS: This form should be used for transmitting the ISSUE FEE and PUBLICATION FEE (if required). Blocks 1 through 5 should be completed where appropriate. All further correspondence including the Patent, advance orders and notification of maintenance fees will be mailed to the current correspondence address as indicated unless corrected below or directed otherwise in Block 1, by (a) specifying a new correspondence address; and/or (b) indicating a separate "FEE ADDRESS" for maintenance fee notifications.

CURRENT CORRESPONDENCE ADDRESS (Note: Use Block 1 for any change of address)

76277 7590 11/27/2019
IP LEGAL SERVICES, LLC
P.O. Box 651325
Sterling, VA 20165

Note: A certificate of mailing can only be used for domestic mailings of the Fee(s) Transmittal. This certificate cannot be used for any other accompanying papers. Each additional paper, such as an assignment or formal drawing, must have its own certificate of mailing or transmission.

Certificate of Mailing or Transmission

I hereby certify that this Fee(s) Transmittal is being deposited with the United States Postal Service with sufficient postage for first class mail in an envelope addressed to the Mail Stop ISSUE FEE address above, or being transmitted to the USPTO via EFS-Web or by facsimile to (571) 273-2885, on the date below.

(Typed or printed name)
(Signature)
(Date)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
15/744,823	01/14/2018	Sung-pyo HONG	811.0104	8317

TITLE OF INVENTION: METHOD FOR CONFIGURING WIRELESS CONNECTION OF TERMINAL AND APPARATUS THEREFOR

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	UNDISCOUNTED	\$1000	\$0.00	\$0.00	\$1000	02/27/2020

EXAMINER	ART UNIT	CLASS-SUBCLASS
NGUYEN, MINH TRANG T	2477	370-329000

1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363).

- ☐ Change of correspondence address (or Change of Correspondence Address form PTO/SB/122) attached.
- ☐ "Fee Address" indication (or "Fee Address" Indication form PTO/SB/47; Rev 03-09 or more recent) attached. **Use of a Customer Number is required.**

2. For printing on the patent front page, list

- (1) The names of up to 3 registered patent attorneys or agents OR, alternatively,
- (2) The name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed.

1 IP Legal Services, LLC

2 _____

3 _____

3. ASSIGNEE NAME AND RESIDENCE DATA TO BE PRINTED ON THE PATENT (print or type)

PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. If an assignee is identified below, the document must have been previously recorded, or filed for recordation, as set forth in 37 CFR 3.11 and 37 CFR 3.81(a). Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE

KT CORPORATION

(B) RESIDENCE: (CITY and STATE OR COUNTRY)

Gyeonggi-do, Republic of Korea

Please check the appropriate assignee category or categories (will not be printed on the patent) : ☐ Individual ☒ Corporation or other private group entity ☐ Government

4a. Fees submitted: ☒ Issue Fee ☐ Publication Fee (if required) ☐ Advance Order - # of Copies _____

4b. Method of Payment: (Please first reapply any previously paid fee shown above)

☒ Electronic Payment via EFS-Web ☐ Enclosed check ☐ Non-electronic payment by credit card (Attach form PTO-2038)

☒ The Director is hereby authorized to charge the required fee(s), any deficiency, or credit any overpayment to Deposit Account No. 602802

5. Change in Entity Status (from status indicated above)

- ☐ Applicant certifying micro entity status. See 37 CFR 1.29
- ☐ Applicant asserting small entity status. See 37 CFR 1.27
- ☐ Applicant changing to regular undiscounted fee status.

NOTE: Absent a valid certification of Micro Entity Status (see forms PTO/SB/15A and 15B), issue fee payment in the micro entity amount will not be accepted at the risk of application abandonment.

NOTE: If the application was previously under micro entity status, checking this box will be taken to be a notification of loss of entitlement to micro entity status.

NOTE: Checking this box will be taken to be a notification of loss of entitlement to small or micro entity status, as applicable.

NOTE: This form must be signed in accordance with 37 CFR 1.31 and 1.33. See 37 CFR 1.4 for signature requirements and certifications.

Authorized Signature _____/Ian M. Hughes/

Date 02/26/2020

Typed or printed name Ian M. Hughes

Registration No. 41,083

Electronic Patent Application Fee Transmittal				
Application Number:		15744823		
Filing Date:		14-Jan-2018		
Title of Invention:		METHOD FOR CONFIGURING WIRELESS CONNECTION OF TERMINAL AND APPARATUS THEREFOR		
First Named Inventor/Applicant Name:		Sung-pyo HONG		
Filer:		Kyung Hee Kim/yujin Chun		
Attorney Docket Number:		811.0104		
Filed as Large Entity				
Filing Fees for U.S. National Stage under 35 USC 371				
Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Basic Filing:				
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
PUBL. FEE- EARLY, VOLUNTARY, OR NORMAL	1504	1	0	0
UTILITY APPL ISSUE FEE	1501	1	1000	1000
Extension-of-Time:				
Miscellaneous:				
Total in USD (\$)				1000

Electronic Acknowledgement Receipt	
EFS ID:	38693753
Application Number:	15744823
International Application Number:	
Confirmation Number:	8317
Title of Invention:	METHOD FOR CONFIGURING WIRELESS CONNECTION OF TERMINAL AND APPARATUS THEREFOR
First Named Inventor/Applicant Name:	Sung-pyo HONG
Customer Number:	76277
Filer:	Kyung Hee Kim/yujin Chun
Filer Authorized By:	Kyung Hee Kim
Attorney Docket Number:	811.0104
Receipt Date:	26-FEB-2020
Filing Date:	14-JAN-2018
Time Stamp:	11:25:29
Application Type:	U.S. National Stage under 35 USC 371

Payment information:

Submitted with Payment	yes
Payment Type	CARD
Payment was successfully received in RAM	\$1000
RAM confirmation Number	E20202PB26048548
Deposit Account	602802
Authorized User	yujin Chun
The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows: 37 CFR 1.17 (Patent application and reexamination processing fees) 37 CFR 1.19 (Document supply fees)	

37 CFR 1.20 (Post Issuance fees) 37 CFR 1.21 (Miscellaneous fees and charges) 37 CFR 1.492 (National application filing, search, and examination fees) 37 CFR 1.492(a) (Basic national fee only)					
File Listing:					
Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Issue Fee Payment (PTO-85B)	8110104IssueFeeTransmittal.pdf	1473754	no	1
			e2cd30a56aa8c7b42717e33bda07510c8c97cd66		
Warnings:					
Information:					
2	Fee Worksheet (SB06)	fee-info.pdf	32192	no	2
			49dbf7cae4dcd4a6230ec7c253bacc5084485555		
Warnings:					
Information:					
Total Files Size (in bytes):			1505946		
This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503. <u>New Applications Under 35 U.S.C. 111</u> If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application. <u>National Stage of an International Application under 35 U.S.C. 371</u> If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course. <u>New International Application Filed with the USPTO as a Receiving Office</u> If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.					



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United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	ISSUE DATE	PATENT NO.	ATTORNEY DOCKET NO.	CONFIRMATION NO.
15/744,823	04/07/2020	10616932	811.0104	8317

76277 7590 03/18/2020
IP LEGAL SERVICES, LLC
P.O. Box 651325
Sterling, VA 20165

ISSUE NOTIFICATION

The projected patent number and issue date are specified above.

Determination of Patent Term Adjustment under 35 U.S.C. 154 (b) (application filed on or after May 29, 2000)

The Patent Term Adjustment is 0 day(s). Any patent to issue from the above-identified application will include an indication of the adjustment on the front page.

If a Continued Prosecution Application (CPA) was filed in the above-identified application, the filing date that determines Patent Term Adjustment is the filing date of the most recent CPA.

Applicant will be able to obtain more detailed information by accessing the Patent Application Information Retrieval (PAIR) WEB site (<http://pair.uspto.gov>).

Any questions regarding the Patent Term Extension or Adjustment determination should be directed to the Office of Patent Legal Administration at (571)-272-7702. Questions relating to issue and publication fee payments should be directed to the Application Assistance Unit (AAU) of the Office of Data Management (ODM) at (571)-272-4200.

APPLICANT(s) (Please see PAIR WEB site <http://pair.uspto.gov> for additional applicants):

Sung-pyo HONG, Seoul, KOREA, REPUBLIC OF;
KT CORPORATION, Gyeonggi-do, KOREA, REPUBLIC OF;
Woo-jin CHOI, Seoul, KOREA, REPUBLIC OF;

The United States represents the largest, most dynamic marketplace in the world and is an unparalleled location for business investment, innovation, and commercialization of new technologies. The USA offers tremendous resources and advantages for those who invest and manufacture goods here. Through SelectUSA, our nation works to encourage and facilitate business investment. To learn more about why the USA is the best country in the world to develop technology, manufacture products, and grow your business, visit SelectUSA.gov.

IR103 (Rev. 10/09)

PATENT ASSIGNMENT COVER SHEET

Electronic Version v1.1
 Stylesheet Version v1.2

EPAS ID: PAT8216218

SUBMISSION TYPE:	NEW ASSIGNMENT	
NATURE OF CONVEYANCE:	EXCLUSIVE LICENSE WITH ALL SUBSTANTIAL RIGHT	
CONVEYING PARTY DATA		
Name		Execution Date
KT CORPORATION		12/23/2022
RECEIVING PARTY DATA		
Name:	PEGASUS WIRELESS INNOVATION LLC	
Street Address:	20319 KIAWAH ISLAND DR	
City:	ASHBURN	
State/Country:	VIRGINIA	
Postal Code:	20147	
PROPERTY NUMBERS Total: 92		
Property Type	Number	
Patent Number:	9894644	
Patent Number:	9998269	
Patent Number:	10181931	
Patent Number:	10306546	
Patent Number:	10341806	
Patent Number:	10728693	
Patent Number:	10085249	
Patent Number:	10568071	
Patent Number:	11082957	
Patent Number:	10432361	
Patent Number:	10742364	
Patent Number:	10644819	
Patent Number:	10412731	
Patent Number:	10616889	
Patent Number:	10581560	
Patent Number:	11197309	
Patent Number:	10892867	
Patent Number:	11431460	
Patent Number:	11431461	
Patent Number:	11115976	

Property Type	Number
Patent Number:	10849111
Patent Number:	11330573
Patent Number:	10237084
Patent Number:	10735967
Patent Number:	10708893
Patent Number:	9713094
Patent Number:	10178626
Patent Number:	10091736
Patent Number:	9461771
Patent Number:	9629010
Patent Number:	10009161
Patent Number:	11258532
Patent Number:	10791530
Patent Number:	11569958
Patent Number:	11363548
Patent Number:	11115157
Patent Number:	10925079
Patent Number:	10506630
Patent Number:	11405942
Patent Number:	11044743
Patent Number:	11765735
Patent Number:	10856307
Patent Number:	10869303
Patent Number:	10897720
Patent Number:	10609699
Patent Number:	11240785
Patent Number:	11160051
Patent Number:	10715290
Patent Number:	10966253
Patent Number:	10594460
Patent Number:	10638463
Patent Number:	11219000
Patent Number:	10715283
Patent Number:	10616916
Patent Number:	10764099
Patent Number:	10868702
Patent Number:	10952206
Patent Number:	11540272

Property Type	Number
Patent Number:	10979190
Patent Number:	11671218
Patent Number:	10284404
Patent Number:	10616024
Patent Number:	10721765
Patent Number:	10721031
Patent Number:	10958380
Patent Number:	10805050
Patent Number:	10616834
Patent Number:	9497666
Patent Number:	9832806
Patent Number:	10334657
Patent Number:	10420067
Patent Number:	10159025
Patent Number:	10667322
Patent Number:	10986530
Patent Number:	10511994
Patent Number:	10448386
Patent Number:	10721118
Patent Number:	10880222
Patent Number:	11044777
Patent Number:	11627631
Patent Number:	11012911
Patent Number:	10869236
Patent Number:	10708968
Patent Number:	10616932
Patent Number:	10660004
Patent Number:	10869243
Patent Number:	10470159
Patent Number:	10499376
Patent Number:	10812230
Patent Number:	10873671
Patent Number:	11178573
Patent Number:	10772148

CORRESPONDENCE DATA

Fax Number:

Correspondence will be sent to the e-mail address first; if that is unsuccessful, it will be sent using a fax number, if provided; if that is unsuccessful, it will be sent via US Mail.

Phone:	4349062975
Email:	yoon@pegasuswi.com
Correspondent Name:	YEASUN YOON
Address Line 1:	20319 KIAWAH ISLAND DR
Address Line 4:	ASHBURN, VIRGINIA 20147
ATTORNEY DOCKET NUMBER:	ASSIGNMENT KT PEGASUS 01
NAME OF SUBMITTER:	YEASUN YOON
SIGNATURE:	/yoon/
DATE SIGNED:	10/11/2023
	This document serves as an Oath/Declaration (37 CFR 1.63).
Total Attachments: 33 source=Assignment (Exclusive License) _Hole copy#page1.tif source=Assignment (Exclusive License) _Hole copy#page2.tif source=Assignment (Exclusive License) _Hole copy#page3.tif source=Assignment (Exclusive License) _Hole copy#page4.tif source=Assignment (Exclusive License) _Hole copy#page5.tif source=Assignment (Exclusive License) _Hole copy#page6.tif source=Assignment (Exclusive License) _Hole copy#page7.tif source=Assignment (Exclusive License) _Hole copy#page8.tif source=Assignment (Exclusive License) _Hole copy#page9.tif source=Assignment (Exclusive License) _Hole copy#page10.tif source=Assignment (Exclusive License) _Hole copy#page11.tif source=Assignment (Exclusive License) _Hole copy#page12.tif source=Assignment (Exclusive License) _Hole copy#page13.tif source=Assignment (Exclusive License) _Hole copy#page14.tif source=Assignment (Exclusive License) _Hole copy#page15.tif source=Assignment (Exclusive License) _Hole copy#page16.tif source=Assignment (Exclusive License) _Hole copy#page17.tif source=Assignment (Exclusive License) _Hole copy#page18.tif source=Assignment (Exclusive License) _Hole copy#page19.tif source=Assignment (Exclusive License) _Hole copy#page20.tif source=Assignment (Exclusive License) _Hole copy#page21.tif source=Assignment (Exclusive License) _Hole copy#page22.tif source=Assignment (Exclusive License) _Hole copy#page23.tif source=Assignment (Exclusive License) _Hole copy#page24.tif source=Assignment (Exclusive License) _Hole copy#page25.tif source=Assignment (Exclusive License) _Hole copy#page26.tif source=Assignment (Exclusive License) _Hole copy#page27.tif source=Assignment (Exclusive License) _Hole copy#page28.tif source=Assignment (Exclusive License) _Hole copy#page29.tif source=Assignment (Exclusive License) _Hole copy#page30.tif source=Assignment (Exclusive License) _Hole copy#page31.tif source=Assignment (Exclusive License) _Hole copy#page32.tif source=Assignment (Exclusive License) _Hole copy#page33.tif	

PATENT RIGHTS ASSIGNMENT

WHEREAS, **KT Corporation**, having a place of business at KT Kwanghwamun Bldg, East 33, Jong-ro 3-gil, Seoul, Korea 03155 (hereinafter "Assignor") is the sole owner of any and all patents and/or patent applications in the Patent Families listed in Schedule 1 annexed hereto (collectively referred to as the "Patents"). Herein, the term "Patent Families" means a collection of (i) a patent or a patent application; (ii) any and all foreign counterparts of the patent or the patent application described in (i); (iii) any divisionals, continuations, continuations-in-part, reissues, reexaminations, utility models, parents, or extensions, relating to any of the patents and patent applications described in (i) and (ii);, and (iv) any patent or patent application whose priority is based upon or in common with any patents and patent applications described in (i), (ii) and (ii).

WHEREAS, **Pegasus Wireless Innovation LLC**, having a place of business at 20319 Kiawah island Drive Ashburn VA 20147 USA (hereinafter "Purchaser") is desirous of acquiring all substantial rights in and to the Patents; and

Now, Therefore,

For good and valuable consideration, the receipt of which is hereby acknowledged, Assignor does hereby sell, assign, transfer and set over to Assignee, subject to existing encumbrances, (a) an exclusive, worldwide license to import, manufacture, have manufactured, use, lease, sell, offer to sell, or otherwise dispose of products encompassed by one or more claims of the Patents; (b) the exclusive right to: (i) enforce the Patents; (ii) sublicense or otherwise grant rights under the Patents; (iii) collect and receive damages, royalties, injunctive relief, and/or settlements for past, current, and future infringements of and to the Patents; (iv) sue or otherwise assert causes of action for the past, current,

and future infringements of and to the Patents; (v) control the prosecution of the Patents before any patent office in the world; (vi) indulge infringement of the Patents; and (c) any and all other substantial rights to and in the Patents necessary and sufficient under any applicable law or precedent to confer standing to Assignee and permit Assignee to initiate any actions on its own.

Assignor has executed this Assignment by its duly authorized representative.

KT Corporation

By: 陳榮浩.

Name: Chanhō Min

Title: Team Manager.

Date: 12/23/2022

SCHEDULE 1

No.	REF-NO	Country	Application/Issue No.	Application/issue date
1	P20130686	Provisional Application	10-2013-0114759	2013.09.26
	P20140028	KR Application	10-2014-0007262	2014.01.21
		KR Issue	10-1940344	2019.01.14
	P20130686PC	PCT	PCT/KR2014/008216	2014.09.02
	P20130686US	US Application	15/024,862	2016.03.25
		US Issue	9,894,644	2018.02.13
	P20130686CN	CN Application	201480053323.5	2016.03.25
		CN Issue	CN105659511B	2019.02.12
2	P20130687	Provisional Application	10-2013-0114763	2013.09.26
	P20130953	Provisional Application	10-2013-0138703	2013.11.15
	P20140134	KR Application	10-2014-0027531	2014.03.10
		KR Issue	10-1561838	2015.10.14
	P20140134P1	KR Application(DA)	10-2015-0139479	2015.10.05
		KR Issue(DA)	10-1645898	2016.07.28
	P20130687PC	PCT	PCT/KR2014/008708	2014.09.18
	P20130687US	US Application	15/024,873	2016.03.25
		US Issue	10,432,361	2019.10.01
	P20130687USC1	US Application(CA)	16/542,513	2019.08.16
		US Issue(CA)	10,742,364	2020.08.11
	P20130687CN	CN Application	201480053584.7	2016.03.28

3	P20130698	Provisional Application	10-2013-0115367	2013.09.27
	P20140216	KR Application	10-2014-0057938	2014.05.14
		KR Issue	10-1904572	2018.09.27
	P20130698PC	PCT	PCT/KR2014/008765	2014.09.22
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		US Issue	10,181,931	2018.01.15
	P20130698CN	CN Application	201480053321.6	2016.03.25
		CN Issue	CN105594139B	2019.10.25
4	P20130737	Provisional Application	10-2013-0118593	2013.10.04
	P20131006	Provisional Application	10-2013-0142479	2013.11.21
	P20140221	KR Application	10-2014-0067128	2014.06.02
		KR Issue	10-1919636	2018.11.12
	P20140221PC	PCT	PCT/KR2014/008995	2014.09.26
	P20140221US	US Application	15/026,260	2016.03.31
		US Issue	9,998,269	2018.06.12
	P20140221CN	CN Application	201480054504.X	2016.04.01
		CN Issue	CN105659514B	2018.06.01
5	P20140587	Provisional Application	10-2014-0101467	2014.08.07
	P20150161	KR Application	10-2015-0094846	2015.07.02
		KR Issue	10-1875255	2018.06.29
	P20140587PC	PCT	PCT/KR2015/008037	2015.07.31
	P20140587US	US Application	15/501,263	2017.02.02
		US Issue	10,644,819	2020.05.05

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	P20140587CN	CN Application	201580042296.6	2017.02.06
		CN Issue	CN106664697B	2020.06.16
6	P20150017	Provisional Application	10-2015-0008486	2015.01.19
	P20150734	Provisional Application	10-2015-0135899	2015.09.24
	P20150844	KR Application	10-2016-0005012	2016.01.15
		KR Issue	10-1856304	2018.05.02
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		US Issue	10,306,546	2019.05.28
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		CN Issue	CN107113149B	2020.12.08
7	P20150278	Provisional Application	10-2015-0068715	2015.05.18
	P20150609	Provisional Application	10-2015-0114876	2015.08.13
	P20160030	KR Application	10-2016-0027594	2016.03.08
		KR Issue	10-1956978	2019.03.05
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		US Issue	10,341,806	2019.07.02
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8	P20150724	Provisional Application	10-2015-0135756	2015.09.24
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	P20160287	KR Application	10-2016-0098858	2016.08.03
		KR Issue	10-1896766	2018.09.03
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		US Issue	10,085,249	2018.09.25
	P20150724CN	CN Application	201610806693.2	2016.09.06
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9	P20160067	Provisional Application	10-2016-0014509	2016.02.04
	P20160076	Provisional Application	10-2016-0015050	2016.02.05
	P20160169	Provisional Application	10-2016-0039529	2016.03.31
	P20160548	KR Application	10-2016-0117138	2016.09.12
		KR Issue	10-1910245	2018.10.15
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		US Issue	10,568,071	2020.02.18
	P20160067CN	CN Application	201710021966.9	2017.01.12
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	P20160855	KR Application	10-2017-0022956	2017.02.21
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12	P20160240	Provisional Application	10-2016-0051737	2016.04.27
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		KR Issue	10-1963483	2019.03.22
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		US Issue	10,412,731	2019.09.10
	P20160240USC1	US Application(CA)	16/529,789	2019.08.02
		US Issue(CA)	10,616,889	2020.04.07
	P20160240CN	CN Application	201710280467.X	2017.04.26
		CN Issue	CN 107317662 B	2020.12.08
13	P20160257	Provisional Application	10-2016-0055676	2016.05.04
	P20160265	Provisional Application	10-2016-0058317	2016.05.12

14	P20170206	KR Application	10-2017-0056206	2017.05.02
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	P20170207	KR Application	10-2017-0056011	2017.05.02
		KR Issue	10-2093906	2020.03.20
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		US Issue	11,431,460	2022.08.30
	P20160257CN	CN Application	201780027159.4	2018.11.01
		CN Issue	CN 109075949 B	2021.12.14
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	P20160257USD1	US Application(DA)	16/179,863	2018.11.02
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		CN Issue(DA)	CN 109547182 B	2021.07.23
14	P20160645	Provisional Application	10-2016-0116784	2016.09.09
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15	P20160670	Provisional Application	10-2016-0122509	2016.09.23
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16	P20160683	Provisional Application	10-2016-0127089	2016.09.30
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		KR Issue	10-2085195	2020.02.28
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	P20140207	Provisional Application	10-2014-0037394	2014.03.31
	P20140784	KR Application	10-2014-0175190	2014.12.08
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		US Issue	9,629,010	2017.04.18

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		CN Issue(DA)	CN 110149169 B	2021.12.14
18	P20140253	Provisional Application	10-2014-0046986	2014.04.18
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		KR Issue	10-1674791	2016.11.03
	P20140253US	US Application	14/687,865	2015.04.15
		US Issue	10091736	2018.10.02
	P20140253CN	CN Application	201510188805.8	2015.04.20
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19	P20160508	Provisional Application	10-2016-0089972	2016.07.15
	P20170351	KR Application	10-2017-0087597	2017.07.11
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		US Issue	10,791,530	2020.09.29
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	P20160508CN	CN Application	201780041919.7	2019.01.04
		CN Issue	CN 109417422 B	

20	P20160627	Provisional Application	10-2016-0112748	2016.09.01
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	P20160627EP	EP Application	17846885.6	2018.12.28
21	P20160627CN	CN Application	201780039745.0	2018.12.26
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	P20160720USC1C1	US Application(CA)	18/078,965	2022.12.11
		US Issue(CA)		
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22	P20160768	Provisional Application	10-2016-0141451	2016.10.27
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	P20170798	KR Application	10-2017-0139598	2017.10.25
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		US Issue	11,115,157	2021.09.07
	P20160768USC1	US Application(CA)	17/379,977	2021.07.19
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	P20160768CN	CN Application	201780062118.9	2019.04.08
		CN Issue	CN 109804692 B	2022.07.15
23	P20160836	Provisional Application	10-2016-0152659	2016.11.16
	P20170803	KR Application	10-2017-0151983	2017.11.15
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		US Issue	11,405,942	2022.08.02
	P20160836CN	CN Application	201780069729.6	2019.05.10
24	P20160837	Provisional Application	10-2016-0152587	2016.11.16
	P20170804	KR Application	10-2017-0153125	2017.11.16
		KR Issue	10-2195869	2020.12.21
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	P20160837CN	CN Application	201780070560.6	2019.05.15
25	P20160768	Provisional Application	10-2016-0141451	2016.10.27
	P20170778	Provisional Application	10-2017-0130023	2017.10.11
	P20170142	Provisional Application	10-2017-0037553	2017.03.24
	P20170428	Provisional Application	10-2017-0079911	2017.06.23
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		KR Issue(병합)	10-2162591	2020.09.28
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	P20170142CN	CN Application	201780066539.9	2019.04.26
		CN Issue	CN 109891988 B	2022.08.09
26	P20170011	Provisional Application	10-2017-0002589	2017.01.06
	P20170296	Provisional Application	10-2017-0066632	2017.05.30
	P20170933	KR Application	10-2018-0001157	2018.01.04
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	P20170011CN	CN Application	201880004512.1	2019.05.22
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27	P20170132	Provisional Application	10-2017-0035615	2017.03.21
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	P20170935	KR Application	10-2018-0014576	2018.02.06
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		KR Issue(DA)	10-2206761	2021.01.19
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		US Issue	10,856,307	2020.12.01
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28	P20170131	Provisional Application	10-2017-0033297	2017.03.16
	P20170479	Provisional Application	10-2017-0082920	2017.06.29
	P20170622	Provisional Application	10-2017-0101782	2017.08.10
	P20170132	Provisional Application	10-2017-0035615	2017.03.21
	P20170866	Provisional Application	10-2017-0101169	2017.08.09
	P20180049	KR Application	10-2018-0018656	2018.02.14
		KR Issue	10-2100483	2020.04.07

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		US Issue	10,869,303	2020.12.15
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		CN Issue	CN 108633072 B	8/26/2022
29	P20170142	Provisional Application	10-2017-0037553	2017.03.24
	P20170428	Provisional Application	10-2017-0079911	2017.06.23
	P20170800	KR Application	10-2017-0139604	2017.10.25
		KR Issue	10-2010019	2019.08.06
	P20170428US	US Application	15/934,927	2018.03.23
		US Issue	10,506,630	2019.12.10
	P20170428CN	CN Application	201810251436.6	2018.03.26
		CN Issue	CN 108633076 B	
30	P20170318	Provisional Application	10-2017-0067957	2017.05.31
	P20180018	KR Application	10-2018-0035572	2018.03.28
		KR Issue	10-2117669	2020.05.26
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	P20170318CN	CN Application	201810524233.X	2018.05.28
		CN Issue	CN 108988984 B	2021.07.09
31	P20170531	Provisional Application	10-2017-0089654	2017.07.14
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		KR Issue	10-2128964	2020.06.25
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		US Issue	10,715,290	2020.07.14
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	P20170621	Provisional Application	10-2017-0102577	2017.08.11
	P20180204	KR Application	10-2018-0057278	2018.05.18
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		US Issue	10,594,460	2020.03.17
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		CN Issue	CN 109309558 B	2021.10.08
33	P20170764	Provisional Application	10-2017-0128188	2017.09.29
	P20170916	Provisional Application	10-2017-0162728	2017.11.30
	P20180207	KR Application	10-2018-0077270	2018.07.03
		KR Issue	10-2114949	2020.05.19
	P20180207P1	KR Application(DA)	10-2020-0042931	2020.04.08
		KR Issue(DA)	10-2246988	2021.04.26
	P20170764US	US Application	16/147,530	2018.09.28
		US Issue	10,638,463	2020.04.28
	P20170764USD1	US Application(DA)	16/826,482	2020.03.23
		US Issue(DA)	11,219,000	2022.01.04
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		CN Issue	CN 109586883 B	2021.11.05

34	P20180014	Provisional Application	10-2018-0004091	2018.01.11
	P20180305	Provisional Application	10-2018-0058965	2018.05.24
	P20180507	KR Application	10-2018-0132306	2018.10.31
		KR Issue	10-2173331	2020.10.28
	P20180014US	US Application	16/241,086	2019.01.07
		US Issue	11,258,532	2022.02.22
	P20180014USC1	US Application(CA)	17/565,353	2021.12.29
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	P20180014CN	CN Application	201910011509.9	2019.01.07
		CN Issue	CN 110034906 B	8/30/2022
35	P20150004	Provisional Application	10-2015-0002948	2015.01.08
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		US Issue	11,330,573	2022.05.10
	P20150004CN	CN Application	201680004054.2	2017.06.08
		CN Issue	CN 107005903 B	2021.01.15
36	P20160666	Provisional Application	10-2016-0122506	2016.09.23
	P20170333	KR Application	10-2017-0104068	2017.08.17
		KR Issue	10-2001301	2019.07.11
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		US Issue	10,334,657	2019.06.25

	P20160666CN	CN Application	201710864759.8	2017.09.22
		CN Issue	CN 108307543 B	2021.06.15
37	P20150003	Provisional Application	10-2015-0002930	2015.01.08
	P20150842	KR Application	10-2015-0185653	2015.12.24
		KR Issue	10-1866619	2018.06.04
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	P20150003US	US Application	15/541,753	2017.07.06
		US Issue	10,237,084	2019.03.19
	P20150003CN	CN Application	201580066326.7	2017.06.06
		CN Issue	CN 107005820 B	2020.11.03
38	P20130110	Provisional Application	10-2013-0034603	2013.03.29
	P20130939	KR Application	10-2013-0136724	2013.11.12
		KR Issue	10-1632277	2016.06.15
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		US Issue	9497666	2016.11.15
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		CN Issue	CN 105103613 B	2018.12.25
39	P20130124	Provisional Application	10-2013-0036870	2013.04.04
	P20130843	Provisional Application	10-2013-0130502	2013.10.30
	P20131105	KR Application	10-2013-0161241	2013.12.23
		KR Issue	10-1628874	2016.06.02
	P20130124PC	PCT	PCT/KR2014/002902	2014.04.04

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		CN Issue	CN 105103593 B	2019.04.19
40	P20160805	Provisional Application	10-2016-0146054	2016.11.03
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		KR Issue	10-2108871	2020.05.04
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	P20160805US	US Application	16/346,987	2019.05.02
		US Issue	11,044,777	2021.06.22
	P20160805USC1	US Application(CA)	17/314,064	2021.05.07
	P20160805EP	EP Application	17867340.6	2019.05.16
41	P20160805CN	CN Application	201780068268.0	2019.05.05
		CN Issue	CN 109906630 B	9/16/2022
	P20170009	Provisional Application	10-2017-0002440	2017.01.06
	P20170905	KR Application	10-2017-0169910	2017.12.12
		KR Issue	10-2016728	2019.08.26
	P20170009US	US Application	15/862,095	2018.01.04
		US Issue	10,448,386	2019.10.15
	P20170009CN	CN Application	201810011263.0	2018.01.05
		CN Issue	CN 108282823 B	8/26/2022

42	P20170232	Provisional Application	10-2017-0054976	2017.04.28
	P20170929	KR Application	10-2018-0033007	2018.03.22
		KR Issue	10-2023539	2019.09.16
	P20170232US	US Application	15/963,422	2018.04.26
		US Issue	10,880,222	2020.12.29
	P20170232CN	CN Application	201810384302.1	2018.04.26
		CN Issue	CN 108810969 B	2021.10.26
43	P20160264	Provisional Application	10-2016-0058157	2016.05.12
	P20160472	Provisional Application	10-2016-0083270	2016.07.01
	P20170196	KR Application	10-2017-0057549	2017.05.08
		KR Issue	10-2183826	2020.11.23
	P20160264PC	PCT	PCT/KR2017/004873	2017.05.11
	P20160264US	US Application	16/300,557	2018.11.10
		US Issue	10,721,118	2020.07.21
	P20160264CN	CN Application	201780029131.4	2018.11.12
44	P20170082	Provisional Application	10-2017-0027919	2017.03.03
	P20170715	KR Application	10-2018-0002228	2018.01.08
		KR Issue	10-2056256	2019.12.10
	P20170082US	US Application	15/909,898	2018.03.01
		US Issue	11,012,911	2021.05.18
45	P20170144	Provisional Application	10-2017-0037934	2017.03.24
	P20180124	KR Application	10-2018-0033250	2018.03.22
		KR Issue	10-2174936	2020.10.30

	P20170144PC	PCT	PCT/KR2018/003466	2018.03.23
	P20170144US	US Application	16/347,572	2019.05.03
		US Issue	10,869,236	2020.12.15
46	P20170654	Provisional Application	10-2017-0107962	2017.08.25
	P20180471	KR Application	10-2018-0088414	2018.07.30
		KR Issue	10-2115233	2020.05.20
	P20170654US	US Application	16/112,619	2018.08.24
		US Issue	10,708,968	2020.07.07
47	P20180026	Provisional Application	10-2018-0006980	2018.01.19
	P20180533	KR Application	10-2018-0091232	2018.08.06
		KR Issue	10-2057139	2019.12.12
	P20180026US	US Application	16/190,355	2018.11.14
		US Issue	10,812,230	2020.10.20
48	P20150254	Provisional Application	10-2015-0067848	2015.05.15
	P20150496	KR Application	10-2015-0099891	2015.07.14
		KR Issue	10-2106134	2020.04.23
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	P20150496US	US Application	15/744,823	2018.01.14
		US Issue	10,616,932	2020.04.07
49	P20130907	Provisional Application	10-2013-0135867	2013.11.08
	P20140043	Provisional Application	10-2014-0012709	2014.02.04
	P20140224	KR Application	10-2014-0088948	2014.07.15
		KR Issue	10-1611825	2016.04.06

50	P20130907PC	PCT	PCT/KR2014/010565	2014.11.05
	P20130907US	US Application	15/027,002	2016.04.04
		US Issue	9,713,094	2017.07.18
	P20130907USC1	US Application(CA)	15/617,137	2017.06.08
		US Issue(CA)	10,178,626	2019.01.08
	P20130907CN	CN Application	201480054086.4	2016.03.30
		CN Issue	CN 105594263 B	2019.11.01
	P20130907CND1	CN Application(DA)	201910949779.4	2019.10.08
	P20140175	Provisional Application	10-2014-0033589	2014.03.21
	P20140197	Provisional Application	10-2014-0034957	2014.03.25
	P20140208	Provisional Application	10-2014-0037398	2014.03.31
	P20140325	Provisional Application	10-2014-0059630	2014.05.19
	P20140785	KR Application	10-2014-0175182	2014.12.08
		KR Issue	10-1632354	2016.06.15
	P20140175PC	PCT	PCT/KR2015/002022	2015.03.03
	P20140175US	US Application	14/664,854	2015.03.21
		US Issue	9461771	2016.10.04
	P20140175CN	CN Application	201580006949.5	2016.08.02
		CN Issue	CN 106464647 B	2019.09.13
	P20140175CND1	CN Application(DA)	201910768106.9	2019.08.20
		CN Issue(DA)	CN 110460409 B	2022.06.24

51	P20160068	Provisional Application	10-2016-0014508	2016.02.04
	P20160549	KR Application	10-2016-0123368	2016.09.26
		KR Issue	10-1888251	2018.08.07
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		US Issue	11,082,957	2021.08.03
	P20160068CN	CN Application	201710043604.8	2017.01.19
		CN Issue	CN 107040338 B	2020.11.06
52	P20170314	Provisional Application	10-2017-0068023	2017.05.31
	P20170670	KR Application	10-2017-0135330	2017.10.18
		KR Issue	10-2156670	2020.09.10
	P20170314US	US Application	15/990,917	2018.05.29
		US Issue	10,616,916	2020.04.07
	P20170314CN	CN Application	201810531289.8	2018.05.29
		CN Issue	CN 108988997 B	2021.04.02
53	P20160663	Provisional Application	10-2016-0122503	2016.09.23
	P20170584	KR Application	10-2017-0118880	2017.09.15
		KR Issue	10-2127753	2020.06.23
	P20170584P1	KR Application(DA)	10-2020-0072207	2020.06.15
		KR Issue(DA)	10-2222399	2021.02.24
	P20160663PC	PCT	PCT/KR2017/010510	2017.09.22
	P20160663US	US Application	16/317,102	2019.01.11
		US Issue	10,764,099	2020.09.01
	P20160663USD1	US Application(DA)	16/929,568	2020.07.15
		US Issue(DA)	10,868,702	2020.12.15

	P20160663EP	EP Application	17853481.4	2018.12.28
	P20160663CN	CN Application	201780041877.7	2019.01.04
		CN Issue	CN 109417529 B	2021.08.31
54	P20160696	Provisional Application	10-2016-0127093	2016.09.30
	P20170667	KR Application	10-2017-0124195	2017.09.26
	P20160696PC	PCT	PCT/KR2017/010811	2017.09.28
	P20160696US	US Application	16/338,433	2019.03.29
		US Issue	11,363,548	2022.06.14
	P20160696EP	EP Application	17856779.8	2019.04.10
	P20160696CN	CN Application	201780061059.3	2019.04.01
		CN Issue	CN 109906569 B	2021.05.11
55	P20160790	Provisional Application	10-2016-0143013	2016.10.31
	P20170799	KR Application	10-2017-0140898	2017.10.27
		KR Issue	10-2114940	2020.05.19
	P20170799P1	KR Application(DA)	10-2020-0053315	2020.05.04
		KR Issue(DA)	10-2130803	2020.06.29
	P20160790PC	PCT	PCT/KR2017/012105	2017.10.30
	P20160790US	US Application	16/346,108	2019.04.29
		US Issue	10,952,206	2021.03.16
	P20160790USC1	US Application(CA)	17/170,922	2021.02.09
		US Issue(CA)	11540272	2022.12.08
	P20160790USC1C1	US Application(CA)	17/970604	2022.10.21
	P20160790EP	EP Application	17865576.7	2019.05.10

	P20160790CN	CN Application	201780066665.4	2019.04.26
		CN Issue	CN 110114997 B	2021.12.10
56	P20160806	Provisional Application	10-2016-0146950	2016.11.04
	P20170668	KR Application	10-2017-0135198	2017.10.18
		KR Issue	10-2092560	2020.03.18
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	P20160806US	US Application	16/347,568	2019.05.03
		US Issue	10,966,253	2021.03.30
	P20160806USC1	US Application(CA)	17/176,149	2021.02.15
	P20160806EP	EP Application	17866547.7	2019.05.13
		EP Issue	3537794	2021.09.08
	P20160806DE	DE Application	17866547.7	2019.05.13
		DE Issue	3537794	2021.09.08
	P20160806GB	GB Application	17866547.7	2019.05.13
		GB Issue	3537794	2021.09.08
	P20160806FR	FR Application	17866547.7	2019.05.13
		FR Issue	3537794	2021.09.08
	P20160806CN	CN Application	201780067632.1	2019.04.30
57	P20160835	Provisional Application	10-2016-0152845	2016.11.16
	P20170801	KR Application	10-2017-0150595	2017.11.13
		KR Issue	10-2129362	2020.06.26
	P20160835PC	PCT	PCT/KR2017/012910	2017.11.15
	P20160835US	US Application	16/349,347	2019.05.13
		US Issue	10,897,720、	2021.01.19

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58	P20170131	Provisional Application	10-2017-0033297	2017.03.16
	P20170479	Provisional Application	10-2017-0082920	2017.06.29
	P20170622	Provisional Application	10-2017-0101782	2017.08.10
	P20170934	KR Application	10-2018-0014571	2018.02.06
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	P20170131US	US Application	15/920,524	2018.03.14
		US Issue	10,609,699	2020.03.31
	P20170131USC1	US Application(CA)	16/792,826	2020.02.17
		US Issue(CA)	11,044,718	2021.06.22
	P20170131USC1C1	US Application(CA)	17/307,978	2021.05.04
	P20170131CN	CN Application	201810217772.9	2018.03.16
		CN Issue	CN 108633071 B	8/23/2022
59	P20170303	Provisional Application	10-2017-0065379	2017.05.26
	P20170451	Provisional Application	10-2017-0081411	2017.06.27
	P20180017	KR Application	10-2018-0037938	2018.04.02
		KR Issue	10-2127755	2020.06.23
	P20180017P1	KR Application(DA)	10-2020-0073684	2020.06.17
		KR Issue(DA)	10-2222396	2021.02.24
	P20170303US	US Application	15/985,862	2018.05.22
		US Issue	10,979,190	2021.04.13

	P20170303USC1	US Application(CA)	17/182,159	2021.02.22
	P20170303CN	CN Application	201810493891.7	2018.05.22
		CN Issue	CN 108966181 B	2021.07.23
60	P20170304	Provisional Application	10-2017-0065387	2017.05.26
	P20170463	Provisional Application	10-2017-0082568	2017.06.29
	P20180097	KR Application	10-2018-0050090	2018.04.30
		KR Issue	10-2114919	2020.05.19
	P20180097P1	KR Application(DA)	10-2020-0034779	2020.03.23
		KR Issue(DA)	10-2198758	2020.12.29
	P20170304US	US Application	15/985,883	2018.05.22
		US Issue	10,284,404	2019.05.07
	P20170304USC1	US Application(CA)	16/357,686	2019.03.19
		US Issue(CA)	10,616,024	2020.04.07
	P20170304CN	CN Application	201810501797.1	2018.05.23
61	P20170741	Provisional Application	10-2017-0118757	2017.09.15
	P20180195	KR Application	10-2018-0077435	2018.07.04
		KR Issue	10-2198015	2020.12.28
	P20170741US	US Application	16/131,686	2018.09.14
		US Issue	10,616,834	2020.04.07
	P20170741CN	CN Application	201811085562.5	2018.09.17
62	P20170743	Provisional Application	10-2017-0118409	2017.09.15
	P20180159	KR Application	10-2018-0056950	2018.05.18
		KR Issue	10-2193191	2020.12.14

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63	P20170765	Provisional Application	10-2017-0128177	2017.09.29
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	P20180532	Provisional Application	10-2018-0084727	2018.07.20
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		US Issue	10,721,765	2020.07.21
	P20170765CN	CN Application	201811147708.4	2018.09.29
		CN Issue	CN 109586881 B	2021.11.12
64	P20170795	Provisional Application	10-2017-0128513	2017.10.02
	P20180084	Provisional Application	10-2018-0022186	2018.02.23
	P20180208	KR Application	10-2018-0096773	2018.08.20
		KR Issue	10-2102319	2020.04.13
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		US Issue	10,715,283	2020.07.14
	P20170795CN	CN Application	201811168010.0	2018.10.08
		CN Issue	CN 109600212 B	2021.08.31
65	P20140677	Provisional Application	10-2014-0119263	2014.09.05
	P20150247	KR Application	10-2015-0094021	2015.07.01

		KR Issue	10-1814248	2017.12.26
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	P20140677US	US Application	15/508,208	2017.03.02
		US Issue	10,735,967	2020.08.04
	P20140677CN	CN Application	201580047094.0	2017.03.02
		CN Issue	CN 106717045 B	2021.03.05
66	P20150098	Provisional Application	10-2015-0032665	2015.03.09
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		KR Issue	10-1987525	2019.06.03
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	P20150098US	US Application	15/556,028	2017.09.06
		US Issue	10,708,893	2020.07.07
	P20150098CN	CN Application	201680013808.0	2017.09.05
		CN Issue	CN 107431592 B	2020.07.07
67	P20160241	Provisional Application	10-2016-0054935	2016.05.03
	P20170025	KR Application	10-2017-0044062	2017.04.05
		KR Issue	10-2016106	2019.08.23
	P20160241US	US Application	15/498,607	2017.04.27
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	P20160241CN	CN Application	201710282167.5	2017.04.26
		CN Issue	CN 107360561 B	2020.09.11
68	P20160249	Provisional Application	10-2016-0054937	2016.05.03
	P20160250	Provisional Application	10-2016-0054936	2016.05.03

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	P20160249US	US Application	16/098,841	2018.11.02
		US Issue	10,667,322	2020.05.26
	P20160249CN	CN Application	201780027502.5	2018.11.02
		CN Issue	CN 109076496 B	2021.09.03
69	P20160251	Provisional Application	10-2016-0054930	2016.05.03
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	P20160251US	US Application	15/582,906	2017.05.01
		US Issue	10,159,025	2018.12.18
	P20160251CN	CN Application	201710291278.2	2017.04.28
		CN Issue	CN 107343299 B	2021.01.05
70	P20170098	Provisional Application	10-2017-0030764	2017.03.10
	P20170317	Provisional Application	10-2017-0068074	2017.05.31
	P20170896	Provisional Application	10-2017-0152149	2017.11.15
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		KR Issue	10-2065137	2020.01.06
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	P20170098US	US Application	16/349,259	2019.05.10
		US Issue	10,986,530	2021.04.20
	P20170098CN	CN Application	201880004237.3	2019.05.06

		CN Issue	CN 109937587 B	2022.06.14
71	P20170397	Provisional Application	10-2017-0076126	2017.06.15
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		KR Issue	10-2023672	2019.09.16
	P20170397US	US Application	16/004,783	2018.06.11
		US Issue	10,511,994	2019.12.17
	P20170397CN	CN Application	201810612491.3	2018.06.14
	P20170397CN	CN Issue	CN 109151878 B	2021.12.14
72	P20160282	Provisional Application	10-2016-0062068	2016.05.20
	P20160481	KR Application	10-2016-0088331	2016.07.13
		KR Issue	10-2100491	2020.04.07
	P20160481PC	PCT	PCT/KR2017/007452	2017.07.12
	P20160481US	US Application	16/316,092	2019.01.08
		US Issue	10,869,243	2020.12.15
73	P20170018	Provisional Application	10-2017-0005590	2017.01.12
	P20170938	KR Application	10-2018-0002947	2018.01.09
		KR Issue	10-2117098	2020.05.25
	P20170018PC	PCT	PCT/KR2018/000518	2018.01.11
	P20170018US	US Application	16/343,819	2019.04.22
		US Issue	10,660,004	2020.05.19
74	P20170234	Provisional Application	10-2017-0054983	2017.04.28
	P20170673	KR Application	10-2018-0000256	2018.01.02
		KR Issue	10-1957087	2019.03.05
	P20170234US	US Application	15/967,512	2018.04.30

		US Issue	10,772,148	2020.09.08
75	P20170238	Provisional Application	10-2017-0057299	2017.05.08
	P20180146	KR Application	10-2018-0036753	2018.03.29
		KR Issue	10-2066689	2020.01.09
	P20170238US	US Application	15/969,858	2018.05.03
		US Issue	10,470,159	2019.11.05
76	P20170389	Provisional Application	10-2017-0076924	2017.06.16
	P20180250	KR Application	10-2018-0053053	2018.05.09
		KR Issue	10-2042036	2019.11.01
	P20170389US	US Application	16/007,050	2018.06.13
		US Issue	10,499,376	2019.12.03
77	P20180202	Provisional Application	10-2018-0039897	2018.04.05
	P20190047	KR Application	10-2019-0020835	2019.02.22
		KR Issue	10-2206773	2021.01.19
	P20180202US	US Application	16/373,808	2019.04.03
		US Issue	10,873,671	2020.12.22
78	P20180557	Provisional Application	10-2018-0090004	2018.08.01
	P20190287	KR Application	10-2019-0075402	2019.06.25
		KR Issue	10-2198010	2020.12.28
	P20180557US	US Application	16/528,980	2019.08.01
		US Issue	11,178,573	2021.11.16
79	P20160807	가출원	10-2016-0146955	2016.11.04
	P20170669	KR 출원	10-2017-0135215	2017.10.18

		KR 등록	10-2130999	2020.07.01
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80	P20170184	가출원	10-2017-0047545	2017.04.12
	P20170239	가출원	10-2017-0056477	2017.05.02
	P20170507	가출원	10-2017-0086107	2017.07.06
	P20180096	정규출원	10-2018-0034955	2018.03.27
	P20170184US	US 출원	15/951,349	2018.04.12
		US 등록	10,958,380	2021.03.23
	P20170184USC1	US 출원(CA)	17/173,097	2021.02.10
	P20170184CN	CN 출원	201810318869.9	2018.04.11